The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 118, No. 6 — COPYRIGHT, 1942, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — FEBRUARY 7, 1942

RATE OF HEMOGLOBIN REGENERATION IN BLOOD DONORS

WILLIS M. FOWLER, M.D.

AND

ADELAIDE P. BARER, PH.D.

IOWA CITY

During the past twenty years there has been a great increase in the number of blood transfusions administered, and the recent use of normal and lyophilized serum in combating shock and in restoring the plasma proteins to their normal level promises to increase still further the already great demand for blood. In spite of the frequent use of whole blood and blood serum there have been surprisingly few studies on the rate of hemoglobin regeneration in the blood donors. Most of the recorded observations have been made on groups of professional donors who have given varying amounts of blood over a period of months or years, and the reports have been concerned with the hemoglobin and erythrocyte levels after multiple donations. Giffin and Haines [1] studied 84 donors, many of whom had given blood for 20 or more transfusions, and concluded that donations of 500 cc. of blood at intervals of four to five weeks are not harmful to male donors but that in female donors anemia often develops under similar conditions. Powell [2] studied 25 donors, 1 of whom had given blood for 63 transfusions, and found that anemia had developed in only 2 of the group. Jones, Widing and Nelson [3] studied 50 donors who had given blood for a total of 175 transfusions and found that the blood hemoglobin level rapidly returned to normal. Certain donors exhibited such regenerative ability that the withdrawal of 1,200 to 2,000 cc. of blood within a period of one to twenty-three days was followed by a return of the hemoglobin level to normal within ten days. Martin and Myers [4] found an average reduction of 310,000 in the erythrocyte count and a 5.2 per cent drop in the hemoglobin level following the removal of 500 cc. of blood. The minimum values were found six hours after the bleeding. No ill effects were noted in 10 donors who had given blood for a total of 52 transfusions, but Martin and Myers expressed the belief that blood should not be taken more frequently than every three months. They too noted that hemoglobin regeneration is slower in female than in male donors. The same interval, three months, between blood donations was recommended by Brewer [5] after observations on 1,076 donors, although he found that the hemoglobin had returned to its normal level at the end of two months in most donors. Cadham [6] found that six months after the withdrawal of small amounts of blood for transfusions of convalescent serum there was no anemia and most of the subjects felt better than they had prior to the blood donations.

Less encouraging reports have been given by other investigators,[7] who have found instances of persistent anemia after repeated donations of blood, and in some cases [8] a reduction in the leukocyte count has been noted. A study of 101 Chinese donors [9] revealed a reduction in the blood hemoglobin that paralleled the amount of blood withdrawn and the time that the subject had been serving as a blood donor. The anemia was of the microcytic type, and glossitis, achlorhydria and splenomegaly were occasionally encountered. The slower hemopoietic response in Chinese donors was attributed to the poor diet on which they subsisted, and it was found that they responded rapidly to the administration of an iron salt.

We have made observations on a total of 200 blood donors who have given blood for 636 transfusions at the University Hospitals. The list of donors was composed almost entirely of medical students, the resident staff and hospital employees, so that the subjects were predominantly young men who were available for follow-up study. A prerequisite to being placed on the list was the absence of organic disease detectable by physical examination, a negative Wassermann reaction and a blood hemoglobin level of 11.5 Gm. or more, except that in the early stages of the investigation a few donors with a lower hemoglobin reading were included. No blood was taken from a donor if a history of a recent infection or other illness was obtained.

An attempt was made to obtain the following data on each subject: the blood hemoglobin level immediately before the giving of blood, the level twenty-four hours after the donation and the level at weekly intervals thereafter until it had returned to the predonation value. In some instances the hemoglobin level prior to the donation was not determined; so the fall in the hemo-

From the Department of Internal Medicine, the State University of Iowa College of Medicine.

Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Giffin, H. Z., and Haines, S. F.: A Review of a Group of Professional Donors, J. A. M. A. **81**: 532 (Aug. 18) 1923.

2. Powell, L. D.: Blood Transfusion: Indications and Methods, J. Iowa M. Soc. **16**: 180, 1926.

3. Jones, H. W.; Widing, H., and Nelson, L.: Blood Donors: Study of Effect in Donors of Repeated Blood Losses, J. A. M. A. **96**: 1297 (April 18) 1931.

4. Martin, J. W., and Myers, J. T.: The Effects of Blood Transfusions on Donors, J. Lab. & Clin. Med. **20**: 593, 1935.

5. Brewer, H. F.: Frequency of Blood Donation, Brit. M. J. **1**: 895, 1939.

6. Cadham, F.: The Effect on Donors of Repeated Limited Blood Loss, Canad. M. A. J. **38**: 465, 1938.

7. Merklen, I. L., and Apffel, A.: Effets des saignées sur le sang des donneurs universels, Presse méd. **44**: 1941, 1936. Fukuda, K., and Tominaga, Y.: Einige haematologische Untersuchungen an den in unserer Klinik angestellten Berufsspendern, Mitt. a. d. med. Akad. zu Kyoto **23**: 708, 1938; cited by Snapper.[9]

8. Brinck, J., and Oettinger, H.: Beobachtungen an Blutspendern, Med. Klin. **33**: 307, 1937.

9. Snapper, I.; Liu, S. H.; Chung, H. L., and Yu, T. F.: Anemia from Blood Donation, Chinese M. J. **56**: 403, 1939.

globin level and the recovery time could not be ascertained, although the rate of hemoglobin regeneration could still be determined. It was necessary to drop some subjects for various reasons before their recovery was complete, and whenever an infection of the upper respiratory tract or another illness that might influence

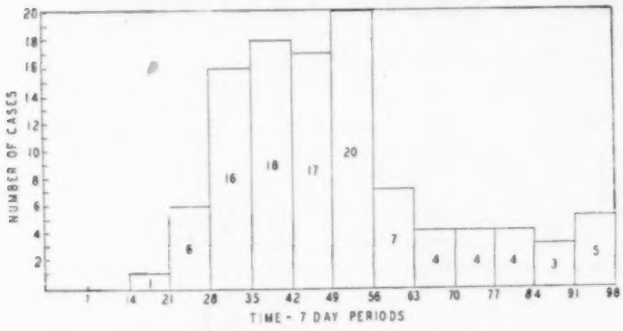


Chart 1.—Recovery period by weeks.

hemoglobin regeneration intervened the subject was immediately dropped from the study. Some subjects reported irregularly for hemoglobin determinations rather than at the specified weekly intervals. For these reasons complete data are not available for all the subjects who were under observation.

The data on hemoglobin regeneration were studied in three ways: 1. The length of time between the blood donation and the return of the blood hemoglobin to its original level, called the recovery period, was determined. 2. The weekly increase in hemoglobin over the amount at the first postdonation reading was ascertained, and from this the average gain per week was determined. 3. The daily increase in hemoglobin per hundred cubic centimeters of blood was ascertained, even though the donor was not followed until complete recovery.

Hemoglobin determinations were made almost entirely with the Newcomer hemoglobinometer, although a photoelectric photometer was used for a few of the more recent subjects. Both instruments were checked by the oxygen capacity method of Van Slyke. Hematocrit determinations were made in duplicate at the time of each hemoglobin determination.

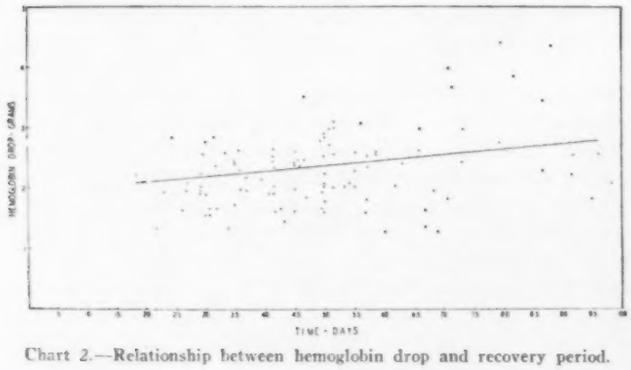


Chart 2.—Relationship between hemoglobin drop and recovery period.

The blood for transfusion was drawn by members of the resident staff into 1,000 cc. graduated flasks in which had been placed a known amount of anticoagulant. The measurement of the amount of blood withdrawn was made from the graduations on the flask and was only grossly accurate. In a group of 155 donors the amount of blood withdrawn ranged from 475 to 600 cc., with an average of 555.7 cc.

In this group the levels of hemoglobin per hundred cubic centimeters of blood averaged 12.8 Gm., with a range of 15 to 10.5 Gm. With the withdrawal of 500 to 600 cc. of blood (the average was 555 cc.) there was a drop in the blood hemoglobin content which averaged 2.3 Gm. per hundred cubic centimeters, the greatest drop being 4.4 and the smallest 1.2 Gm. The 2.3 Gm. represents an average drop of 18 per cent, which is considerably greater than that reported by Martin and Myers.[4]

After the donors who were not followed until the hemoglobin level had returned to normal and those who did not have predonation hemoglobin readings done are excluded, there were 105 men whose recovery period was ascertained. The average time required for the blood hemoglobin to return to its original level was forty-nine and six-tenths days. There were wide variations among the individual recovery periods, the longest being ninety-eight days and the shortest eighteen. There were 29 donors whose hemoglobin had exceeded the original level by the time the first normal reading was obtained, so that the actual recovery period was slightly shorter than that recorded. The recovery period of nearly fifty days is considerably longer than that suggested by some of the previous reports. The number

Weeks	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	106	129	124	126	98	84	73	47	36	27	17	13	9	4
Hb gain	0.54	0.88	1.20	1.46	1.66	1.76	1.83	2.05	1.79	2.07	2.42	1.75	2.36	2.23

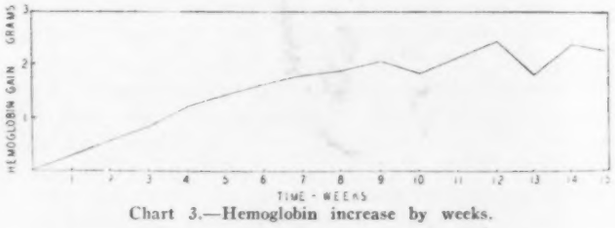


Chart 3.—Hemoglobin increase by weeks.

of donors whose hemoglobin level returned to normal during each seven day period is shown in chart 1. It will be noted that the hemoglobin of 1 donor returned to the original level during the third week, of 6 during the fourth week, of 16 during the fifth week and of 17 to 20 during each of the sixth, seventh and eighth weeks, so that the majority (74.2 per cent of the 105 subjects) had recovered at the end of this period. However, 25.8 per cent had not recovered at the end of eight weeks, whereas it is a common practice to have subsequent blood donations taken after an interval of only six to eight weeks.

From each of 30 donors 250 to 300 cc. of blood was withdrawn on each of two consecutive days, the second donation being taken twenty-four to thirty hours after the first and the reading to determine the fall in the blood hemoglobin being made twenty-four hours after the second donation. The average amount of blood withdrawn from these 30 subjects was 575 cc., and the average drop of the hemoglobin content was 2.2 Gm. The average recovery period for 26 donors, on whom the data was complete, was forty-five and four tenths days, with a range of twenty-seven to seventy-three days. This average is not significantly less than the average of forty-nine and six-tenths days for the entire group of men who gave the same amount of blood in a single donation.

It is well recognized that the rate of hemoglobin regeneration varies from one person to another; so it is

not surprising to find wide variations in the recovery periods. Because of the inaccuracies in measuring the amount of blood withdrawn for transfusion, an attempt was made to correlate the recovery period not with the amount of blood lost but rather with the fall in the blood hemoglobin level. No direct correlation could be made in individual cases, since, for example, the subject with the longest recovery period (ninety-eight days) had a drop in hemoglobin of 2.1 Gm., whereas the subject with the shortest recovery period (eighteen days) had a drop of 2.2 Gm. In general, however, the shortest recovery periods were those of the donors who showed the least drop in hemoglobin and the longest recovery periods those of the donors who showed the greatest fall in hemoglobin. For 23 donors whose recovery period was thirty-five days or less the average fall in hemoglobin was 2 Gm., while for 21 whose recovery period was sixty-three days or more the average fall was 2.7 Gm. From the foregoing statements it may be seen that the donors with a shorter

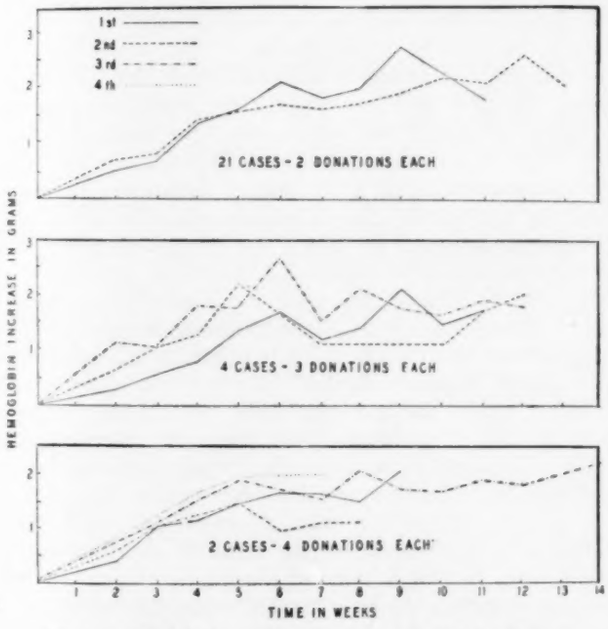


Chart 4.—Hemoglobin regeneration after repeated donations.

recovery period had the smaller reduction and those with a longer recovery period the greater reduction in hemoglobin. Sixteen subjects' blood hemoglobin content dropped 2.8 Gm. or more after the blood donation. The average drop for the 16 was 3.2 Gm. and the average recovery period sixty-one and two-tenths days. For 26 subjects whose drop was 1.9 Gm. or less the average drop was 1.6 Gm. and the average recovery period was forty-three and one-tenth days. It is evident from these data that the subjects with the greatest fall in the hemoglobin level had a longer average recovery period (sixty-one and two-tenths days) than did those with a smaller drop (forty-three and one-tenth days). In chart 2 the recovery period in days is plotted against the fall in hemoglobin, and it may be seen that in spite of individual variations in the rate of hemoglobin formation there is a linear relationship between the two and that the period necessary for recovery corresponds in general to the fall in hemoglobin.

From each of 11 donors only 300 cc. of blood was withdrawn, and they have not been included with the donors giving larger amounts of blood. The fall in the blood hemoglobin content in this group varied from 1.7 to 0.6 Gm., with an average of 1.2 Gm. Only 7 of these 11 donors were followed until complete recovery, and their recovery period varied from twelve to sixty-five days, with an average of thirty-three and three-

TABLE 1.—*Recovery Periods After Each of Two Donations*

Case	First Donation		Second Donation	
	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days
1	1.02	38	2.57	79
2	1.90	29	2.40	64
3	3.51	47	1.68	57
4	1.69	33	1.76	26
5	1.65	42	2.13	51
6	1.89	41	1.89	28
7	1.09	61	3.30	23

tenths days, which is significantly shorter than the average for the group who donated larger amounts of blood and showed a greater fall in hemoglobin.

The donors were predominantly men; so data were obtained on only 13 female donors. Their average drop in hemoglobin content was 2.2 Gm., and for the 5 who were followed to complete recovery the period ranged from thirty to seventy-three days, with an average of fifty-two and two-tenths days. This is but slightly greater than the average of forty-nine and six-tenths days for the entire group of 105 men whose recovery period was ascertained, but these data are not of great significance in view of the small number of cases. Of more significance is the average daily increase in hemoglobin for the 13 female subjects, 0.04 Gm. per hundred cubic centimeters, as compared with the 0.049 Gm. daily increase for the 155 men, suggesting that hemoglobin formation is slightly less rapid in women. Other investigators have reported that females are more prone to the development of anemia after repeated blood loss than are males and that they recover more slowly.

In order to determine the rate of hemoglobin regeneration in our donors—normal persons—we have grouped together all those who gave 500 to 600 cc. of blood. The recovery periods have been divided into weekly intervals, the gain in hemoglobin content over the content at the first postdonation reading has been recorded for each subject and the average gain for the entire group at the end of each week has been determined.

TABLE 2.—*Recovery Periods After Each of Four Donations*

Donor	First Donation		Second Donation		Third Donation		Fourth Donation	
	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days
1	1.76	57	1.69	..	2.07	47	2.11	38
2	1.89	41	1.89	28	2.19	86	2.34	..

Since observations were discontinued when the hemoglobin reached the original level and because some subjects dropped from observation, there is a gradual reduction in the number of donors for whom the averages were determined after the first five weeks. This gain in hemoglobin per week, together with the number of donors from whom the averages were derived and the curve of regeneration, is portrayed graphically in chart 3. It will be noted that there is an average increase of 0.54 Gm. during the first two weeks and a

subsequent gain of approximately 0.2 to 0.3 Gm. each week for the subsequent ten weeks. After the tenth week the curve is more irregular. Since the subjects followed for the longest time are those with the slowest hemoglobin regeneration and since those whose blood hemoglobin level had returned to normal were dropped from this study, the increase in hemoglobin in the later periods is less rapid.

The daily gain in hemoglobin per hundred cubic centimeters of blood was determined for each subject, and it was found that the average daily gain for the entire group of men was 0.049 Gm., with a standard deviation from the mean of ± 0.023 Gm. These data

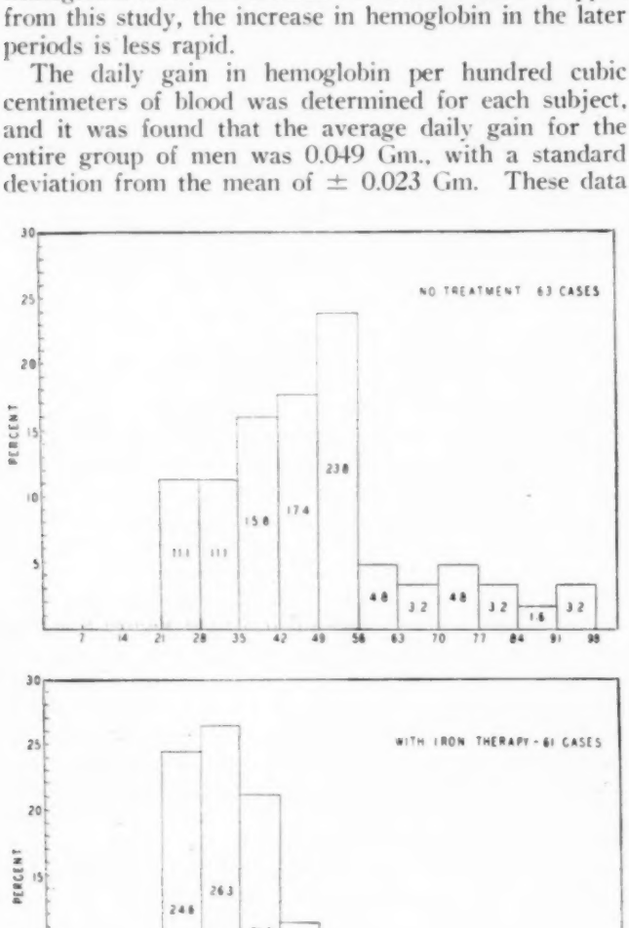


Chart 5.—Recovery period with and without iron therapy.

show the rate of hemoglobin regeneration in normal persons following the loss of a known amount of blood. No medication of any type was allowed.

In an attempt to ascertain whether or not the original blood hemoglobin level had any effect on the rapidity of regeneration the average daily increase was determined for donors whose hemoglobin level was 13.5 Gm. or more and for those whose level was 12.5 Gm. or less. For donors with the higher hemoglobin levels the average daily increase was 0.048 Gm., while it was 0.055 Gm. for those with the lower readings. It is apparent therefore that the initial hemoglobin level is not a significant factor in the rapidity of regeneration.

Twenty-one subjects were followed after a second blood donation. Their average hemoglobin drop after the first donation was 2.1 Gm., and their average recovery period was forty-three days. The average drop after the second donation was 2.3 Gm., and the average recovery period was fifty-two and one-half days. This seems to indicate a lengthening of the recovery period, but in table 1, in which are given the individual records of the 7 subjects (of the 21) on whose recovery period after each donation the data were complete, it may be seen that for 4 donors (donors 1, 2, 3 and 5)

TABLE 3.—*Recovery Period and Hemoglobin Gain After Two Donations, With and Without Iron Therapy*

	Iron Therapy, First Donation			No Treatment, Second Donation		
Donors	Hemoglobin Drop, Gm.	Recovery, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery, Days	Daily Hemoglobin Gain, Gm.
15	2.17	39.1	0.06	2.62	52.6	0.04

it was longer and for 3 it was shorter after the second donation. For the 2 donors whose hemoglobin drop was almost identical after the two donations (donors 4 and 6) the recovery period was shorter after the second. Two donors gave 4 donations, and their recovery periods and the changes in their hemoglobin content are given in table 2. For donor 1 the recovery period was shorter after the third and fourth donations than after the first, and for donor 2 the period was shorter after the second but longer after the third donation. In chart 4 are plotted the hemoglobin gains per week in donors who gave more than 1 donation. In part 1 are the curves for the 21 donors after their first and second donations. In part 2 the average gain is shown for 4 subjects after each of 3 donations and in part 3 the average hemoglobin gain for 2 subjects after each of 4 donations. It is to be noted that there was no appreciable decrease in the rate of hemoglobin regeneration after 4 donations had been given. This is also evident from the average daily hemoglobin increase, which for 21 subjects after the first donation was 0.046 Gm., whereas after the second donation it was 0.048 Gm. The average daily hemoglobin increase for 4 subjects after their third donation was 0.051 Gm., and for 2 subjects after their fourth donation it was 0.06 Gm., so that in none of these subjects was the rate of regeneration slower after subsequent donations than after the first. All the subjects were followed until the original hemoglobin level was reached, and the next donation was given from one to seven days later. The interval between donations varied slightly, but subsequent donations followed soon after the subject's hemoglobin level had returned to normal.

TABLE 4.—*Data on Female Donors*

	No Treatment, First Donation			Iron Therapy, Second Donation		
Donors	Hemoglobin Drop, Gm.	Recovery, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery, Days	Daily Hemoglobin Gain, Gm.
6	2.08	52.4	0.04	2.49	43.6	0.06

EFFECT OF IRON THERAPY ON HEMOGLOBIN REGENERATION

Although the donors were receiving a normal diet and there was no evidence of or reason to suspect any degree of iron deficiency, we gave 1 Gm. (15 grains) of iron and ammonium citrates daily to certain subjects to study the effect on their hemoglobin regeneration. Eighty-nine donors gave one donation of blood

without medication during the recovery period and received iron and ammonium citrates after a second donation. The average daily hemoglobin gain for these 89 subjects after the first donation was 0.0518 Gm., and the average recovery period was forty-eight and two-tenths days for the 63 donors for whom it could be determined. After the second blood donation, with iron therapy, the average daily hemoglobin gain was 0.0772 Gm., an increase of 49 per cent over the gain in the first period. The average recovery period was only thirty-five and two-tenths days, a drop of thirteen days, or 26.9 per cent.

Of the 89 donors studied after each of 2 donations the recovery period of 63 was determined after the first donation and of 61 after the second. In chart 5 is presented the percentage of each group whose hemoglobin level returned to normal in each seven day period. The upper part shows the percentage of donors whose level returned to normal each week after the first donation, when no medication was administered, and the lower part shows the results in the period after the second donation, during which the subjects were receiving iron therapy. The upper part corresponds in general to the results shown in chart 1 for 105 subjects.

None had a recovery period of less than twenty-one days, but 11.1 per cent recovered during each of the fourth and fifth weeks. During the next three weeks there was a gradual increase, with a peak of 23.8 per cent recovering during the eighth week. After this there was a sharp drop, so that from 1.6 per cent to 4.8 per cent of the donors recovered each week for the next six weeks. The results obtained after the second donation, during which period iron was administered, are in sharp contrast to those obtained after the first donation. In 4.9 per cent of the donors the hemoglobin level returned to normal during the third week, as compared to no returns to normal the third week in the previous group, and during each of the next three weeks 24.6, 26.3 and 21.3 per cent recovered. Of the donors not receiving iron the level in 78.2 per cent had returned to normal by the end of the eighth week, whereas of those receiving iron 77.1 per cent had recovered by the end of the sixth week and 93.5 per cent by the end of the eighth week. Chart 5 illustrates graphically the drastic reduction in the recovery period produced by iron therapy.

The effect of iron is further emphasized in chart 6, in which is plotted the average hemoglobin gain each week for the entire group of 89 subjects after each of the two blood donations. The lower, solid line shows the average weekly gain after the first donation, when no iron was administered. There was a steady increase during the first nine weeks and then a more irregular and a slower increase as fewer donors remained for study. The upper line shows the hemoglobin gain in the period following the second donation, during which iron was administered. It will be noted that the hemoglobin increase was definitely more rapid when iron was given and that the hemoglobin had returned to its original level by the end of the eleventh week in all subjects.

These data have shown a definite increase in the rate of hemoglobin regeneration and a shortening of the recovery period during the administration of iron after a second blood donation. In a smaller group, of 15 subjects, iron was administered after the first blood donation and withheld after the second. In table 3 are shown the results for this group. After the first donation the average recovery period was thirty-nine and one-tenth days and the average daily hemoglobin gain was 0.0675 Gm. After the second donation, when no iron was administered, the average recovery period was definitely prolonged and averaged fifty-two and six-tenths days. Of greater significance is the daily hemoglobin gain of 0.0426 Gm., which is a decrease of 36.8 per cent from the previous rate of increase. It will be noted that, whereas the administration of iron after the second donation increased the rate of hemoglobin formation by 49 per cent, the withholding of iron during the second postdonation period when it had been given during the first period lessened the rate of regeneration by 36.8 per cent.

The administration of iron also increased the rapidity with which the hematocrit reading returned to normal. In 108 subjects who received no iron the average time required for the hematocrit reading to return to its original level was twenty-nine and seven-tenths days, as compared with forty-nine and six-tenths days for the hemoglobin level. The recovery period ranged from nine to ninety-five days. With the administration of iron and ammonium citrates the average recovery period dropped to twenty-two and two-tenths days, individual periods ranging from eight to forty-nine days, which is a decrease of 25.2 per cent. The effect of iron on the hematocrit reading was less noticeable than the effect on hemoglobin regeneration but definitely hastened its return to normal.

TABLE 5.—*Data on Repeated Blood Donations*

	No Treatment First Donation			Continuous Iron Therapy											
				Second Donation			Third Donation			Fourth Donation			Fifth Donation		
Donors	Hemoglobin Drop, Gm.	Recovery Period, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery Period, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery Period, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery Period, Days	Daily Hemoglobin Gain, Gm.	Hemoglobin Drop, Gm.	Recovery Period, Days	Daily Hemoglobin Gain, Gm.
155	2.32	49.6	0.0495												
83	2.36	48.2	0.0518	2.62	35.2	0.0772									
31	2.17	43.8	0.0545	2.43	34.3	0.0866	2.42	38.3	0.0687						
12	2.11	38.8	0.0551	2.45	28.4	0.1006	2.57	35.1	0.0720	2.44	48.9	0.0493			
11	2.17	39.6	0.0547	2.45	28.4	0.1010	2.58	35.1	0.0711	2.41	48.4	0.0489	2.67	48.3	0.0579

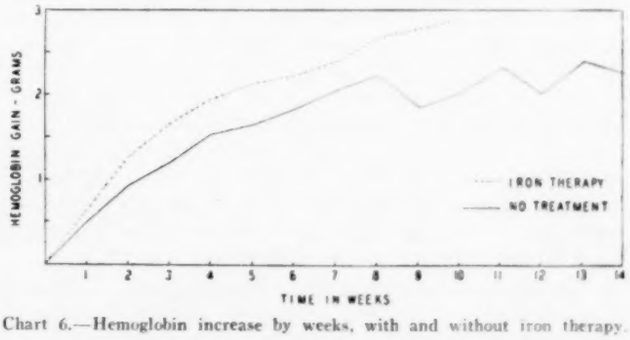


Chart 6.—Hemoglobin increase by weeks, with and without iron therapy.

Six female donors were observed during iron therapy after a second blood donation, and the data on them are given in table 4. After the first blood donation, without therapy, the recovery period was fifty-two and four-tenths days and the daily hemoglobin gain was 0.0427 Gm. After the second donation, with iron therapy, the recovery period was forty-three and six-tenths days and the daily hemoglobin gain was 0.0629 Gm., an increase of 47 per cent over the gain in the first period.

The data so far presented have been concerned with only 2 blood donations and with the giving of iron during the second period. The iron therapy has uniformly increased the rate of hemoglobin formation. Some of the subjects have been studied through a series of blood donations during which they have received iron therapy continuously. Subsequent donations were given within a few days after the hemoglobin had returned to its original level. In table 5 are the data on these donors, all of whom were men who gave from 500 to 600 cc. of blood each time. The drop in hemoglobin, the recovery period in days and the daily hemoglobin increase are given for each group of subjects for each blood donation. The results following the first two donations have been discussed. It will be noted that after the third blood donation the recovery period was shorter and the hemoglobin regeneration more rapid than they had been after the first donation but that recovery was less rapid than after the second donation. After the fourth donation the rate of regeneration was still slower and was no more rapid than it had been during the first recovery period, in which iron therapy had not been given. In the 11 subjects followed through the fifth donation there was a slight gain in rate over that in the fourth period, but the rate was approximately that of the first period. From these data it is evident that the administration of iron had progressively less effect on hemoglobin regeneration but that the rate of regeneration did not drop below that which was noted after the first donation even though 5 donations were made in rather rapid succession.

SUMMARY

These data have been presented to show the drop in hemoglobin that occurs in healthy blood donors after the withdrawal of blood for transfusion and the time required for these persons to regain their normal hemoglobin level. In the event that it becomes necessary to set up transfusion services on a large scale such detailed information may be of value in the selection of donors and in determining the frequency with which they should be used, as well as in presenting accurate data to prospective donors as to the time which must elapse before their blood returns to normal. The average drop in hemoglobin, of 2.3 Gm., after a donation of 555 cc. of blood is not sufficient to be of danger or to produce more than transient symptoms. Although wide variations in the recovery period were noted among individual donors, there was a definite correlation between the drop in hemoglobin and the length of the recovery period in days. It was found that the average man regained the lost hemoglobin within fifty days without any form of therapy. With the donation of a smaller amount of blood and a consequent smaller drop in hemoglobin the recovery period was shorter. Persons with a higher initial hemoglobin reading did not regenerate hemoglobin more rapidly than those with a lower, but still normal, hemoglobin value. We could detect no means by which the rapidity of hemoglobin regeneration in any one person could be predicted beforehand.

Subsequent blood donations may be given with safety as soon as the hemoglobin has returned to its original level, regardless of the elapsed time. In the majority of donors an interval of two months will suffice for hemoglobin regeneration, but 25.8 per cent in our series required a longer period. For this reason it is not advisable to establish a routine interval of two months between donations unless the donor's fitness to give blood is established by hemoglobin determinations. We did not feel that the regeneration of hemoglobin became slower after multiple donations than it had been after the first.

The response of the normal hemopoietic system to the loss of a known amount of blood is of interest. With the resultant mild anemia an average of 0.04 Gm. of hemoglobin per hundred cubic centimeters of blood was produced each day until the deficit was replaced. This was accomplished without medication but with a normal dietary intake of iron.

The administration of small amounts of iron to the blood donors had a surprising effect on hemoglobin regeneration. The rate of regeneration was increased nearly 50 per cent by the use of iron and there was a drastic shortening of the recovery period, so that subsequent blood donations were possible after a much shorter interval. With this medication the blood hemoglobin content in 93.5 per cent of the subjects had returned to normal by the end of eight weeks. The group of donors to whom iron was administered after the first donation but withheld after the second showed a slower hemoglobin regeneration during the second postdonation period. This shows that the increased rate of hemoglobin regeneration after the first donation was due to the effect of the medication itself rather than to a stimulation of the bone marrow from the blood loss. The effect of iron was transient, the donor being benefited only one or two recovery periods, so that continued administration of iron did not maintain the rate of hemoglobin regeneration above the original rate. There was no evidence of exhaustion of the bone marrow while the subjects were under observation, since the rate of hemoglobin regeneration after the fifth donation was approximately the same as that after the first.

The rate of hemoglobin regeneration was slightly less rapid in women than in men, and the time necessary for recovery was somewhat longer. The administration of iron during one recovery period increased the rate of hemoglobin regeneration 47 per cent. Because of the slower regenerative power of their blood female donors should be allowed longer intervals between blood donations.

CONCLUSIONS

The average drop in blood hemoglobin after the removal of 555 cc. of blood was 2.3 Gm.

The average time required to replace this amount of hemoglobin was forty-nine and six-tenths days.

The longer recovery periods were associated with a greater drop in hemoglobin and could not be correlated with the initial blood hemoglobin values. With a smaller donation and a smaller drop in the blood hemoglobin the recovery period was shorter.

Hemoglobin was regenerated in men at the rate of 0.049 Gm. per hundred cubic centimeters of blood per day under these conditions, and in women the increase was 0.040 Gm. per day.

Subsequent donations may be given with safety as soon as the blood hemoglobin has returned to its original level. An interval of three months should be allowed between blood donations if the hemoglobin of the donor is not determined regularly. The rate of hemoglobin regeneration after subsequent blood donations did not seem to be slower than after the first donation.

The administration of 1 Gm. of iron and ammonium citrates per day increased the daily hemoglobin regeneration by 49 per cent and shortened the recovery period from forty-nine and six-tenths to thirty-five and two-tenths days during the first period of its administration. It had progressively less effect after subsequent blood donations.

BLOOD PLASMA

ITS PLACE IN THE PRACTICE OF MEDICINE, WITH SPECIAL CONSIDERATION TO THE PROBLEMS OF PRESERVATION

MAX M. STRUMIA, M.D.
AND
JOHN J. McGRAW, M.D.
BRYN MAWR, PA.

In previous papers we have discussed the technical details of various methods of preservation applicable to human blood plasma and pointed out certain limitations of each method.[1] In this paper we will discuss the effect that the various methods of preservation have on the quality and therapeutic value of plasma. Brief mention will also be made of the dosage in some of the more common conditions.

The following three premises seem generally acceptable: (1) blood plasma is used with satisfactory results in a large number of clinical conditions; (2) the effect of plasma depends on the action of certain elements contained therein; (3) these elements are variously affected by the manner of preservation of the plasma, as will be shown in this presentation. Acceptance of these three premises justifies the conclusion that any method of preservation applied to human plasma will profoundly influence its therapeutic value, and for this reason it is essential for the clinician to have a clear understanding of the changes caused by certain methods of preservation.

EFFECT OF PRESERVATION ON THE SAFETY OF PLASMA

In considering the value of any therapeutic agent, first consideration must be given to the possibility of harmful effects on the patient. Pooled or diluted human plasma separated with ordinary aseptic precautions from citrated blood immediately after collection and administered at once to the patient has proved free of reactions save for mild urticarial manifestations. This strictly fresh plasma is an ideal blood substitute, but its routine use is not practicable. To serve all its purposes blood plasma must be available in a form not requiring time-consuming preparation before administration.

In the development of methods of the preservation of plasma it must be remembered that the safety of the material may be affected by (1) the comparative ease of bacterial contamination and (2) the tendency of certain unstable proteins to form particles. Bacterial contamination has been responsible for most of the febrile reactions which have been reported[2] following the administration of plasma. Recently the report of a sudden death during the intravenous administration of unfiltered plasma[3] has emphasized the absolute necessity of strict care in the prevention of flocculation or filtration to remove flocculi already formed. Microscopic examination of sections of lung tissue showed numerous small branches of the pulmonary artery blocked by emboli of fibrin-like material.

Both bacterial contamination and flocculation may be effectively prevented by rapid separation of plasma from freshly collected blood, followed by prompt fixation of plasma by freezing. Plasma may then be stored in the frozen state or, if it is considered desirable, dried from the frozen state.

Proper restoration of frozen or dried plasma results in a liquid free from flocculi. It must be noted, however, that while plasma properly restored from the frozen state is practically indistinguishable from the original material, plasma restored from the dried state is turbid. This turbidity, however, does not apparently cause any untoward effects.

Complete details of a method of preparation of plasma and of preservation by freezing or drying may be found elsewhere.[4]

To complete the measures to be taken to insure a safe material, provision must be made to reduce an occasionally high isoagglutinin content by pooling from eight to twelve lots of plasma.

EFFECT OF PRESERVATION ON CERTAIN SPECIFIC ELEMENTS OF PLASMA

We will now compare various methods of preservation in general use, with special reference to the efficiency of each method in maintaining the original content of the various elements of plasma.

In the table are listed the clinical conditions in which plasma is most widely used, grouped according to the plasma fraction on which most of the therapeutic effect is based.

In general, the response to plasma transfusion is dependent on (1) the total protein content, (2) the specific and nonspecific antibodies and (3) the antihemorrhagic properties due in part to prothrombin. The practical application of this grouping to clinical cases demonstrates much overlapping, as most patients will benefit from more than one of the fractions mentioned, although in varying degrees. For this reason preserved plasma should be as nearly like the fresh material as possible.

From the Laboratory of Clinical Pathology, Bryn Mawr Hospital.

Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

This work was aided by a research fund created by Mrs. John S. Sharpe, Mrs. Edward Law, the Social Service Department, the Women's Board of the Bryn Mawr Hospital, and the National Research Council.

1. Strumia, M. M., and McGraw, J. J.: Frozen and Dried Plasma for Civil and Military Use, to be published. Strumia, McGraw and Reichel.[4]

2. Strumia, M. M., and McGraw, J. J.: The Development of Plasma Preparations for Transfusions, read before the American College of Physicians, Boston, April 24, 1941. Reports of British Workers contained in Bulletin on Shock, National Research Council.

3. Mayner, Frank: Death from Transfusion of Plasma, J. A. M. A. **116:** 2015 (May 3) 1941.

4. Strumia, M. M.; McGraw, J. J., and Reichel, John: The Preparation and Preservation of Human Plasma: I. Collection of Blood and Separation of Plasma, Am. J. Clin. Path. **11:** 175 (March) 1941; II. Drawing Off, Pooling and Distribution of Plasma, ibid. **11:** 288 (April) 1941; III. Freezing of Plasma and Preservation in the Frozen State, ibid. **11:** 388 (May) 1941. IV. Drying of Plasma from the Frozen State by Low Temperature Condensation, in Vacuo, ibid. **11:** 480 (June) 1941.

USE OF PLASMA FOR TOTAL PROTEIN CONTENT

The large group of conditions (including shock and various forms of hypoproteinemia) which are benefited mainly by the total protein content of plasma are adequately treated by plasma preserved in any form provided it is pyrogen free and contains no flocculi. The amount of protein lost by flocculation occurring in liquid plasma preserved at 4 C. is practically negligible. Flocculation is almost completely eliminated by preservation of plasma at room temperature (about 25 C.). Although desiccation of plasma apparently alters the albumin-globulin ratio as determined by the usual laboratory methods, no indication of alteration of the proteins is found in the cataphoretic pattern obtained by the Tiselius apparatus.[5] Plasma that has been properly preserved in the frozen state and rapidly thawed[6] appears almost identical to fresh plasma. This means of preservation is the only one to maintain maximal content of all the specific elements. This is important in the treatment of many diseases requiring complement and prothrombin in addition to the total protein content, such as for example a patient suffering from shock with wounds likely to become infected, or a patient with hypoproteinemia and hypoprothrombinemia resulting from such conditions as liver disease, colitis and intestinal obstruction.

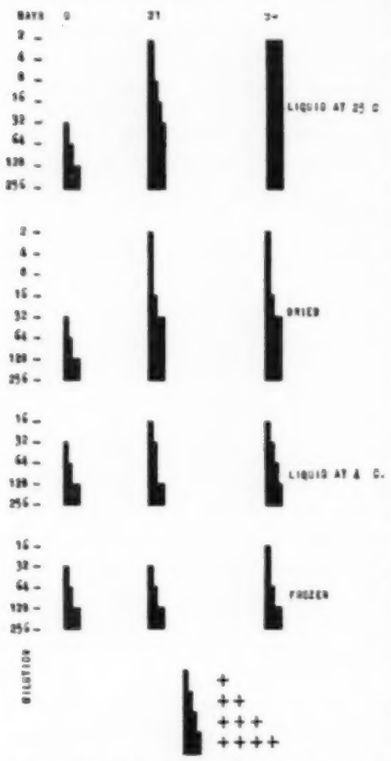


Chart 1.—Effect of various methods of preservation of plasma on complement titer. The amount of complement is inversely proportional to the thickness of the lines of the graph, thus:

No line 0 100% complement
Widest line ++++ no complement

When hypoproteinemia is the indication for the use of plasma transfusion, the quantity to be administered is a major factor that will be considered later.

SPECIFIC AND NONSPECIFIC ANTIBODIES

Whereas the specific antibodies are relatively stable,[7] the content of complement is considerably influenced by the means of preservation. Chart 1 shows the effect of the method of preservation on the complement content as determined by amboceptor-hemolysin titration. The preservation of complement is optimal when the plasma is maintained in the frozen state, very satisfactory for almost two months when it is maintained at 4 C., fair when preserved by drying and poor at room temperature (about 25 C.). It must be mentioned that when serum is dried in small quantities, in the order of 1 to 10 cc., preservation of complement is very good. Thus guinea pig serum for the complement fixation test is adequately preserved by drying in small quantities without previous addition of preservative. Results expressed in chart 1 are based on titration of plasma prepared by a standard technic described elsewhere,[4] in which the citrated plasma is dried in lots of approximately 300 cc. containing from 17.5 to 18 Gm. of plasma protein in a 400 cc. bottle. It is possible but less practicable to dry this quantity of plasma in such a manner as to maintain a higher content of complement. In all the dried plasma mentioned in this article the residual moisture was less than 1 per cent. It must be mentioned also that all the plasma used in this investigation contained merthiolate in the proportion of 1:10,000. The effect of this preservative on the survival of the various elements of plasma is being investigated.

ANTIHEMORRHAGIC PROPERTIES

In this review we will limit our observations mainly to the antihemorrhagic properties due to the prothrombin content. The loss of prothrombin in citrated blood kept at 4 C. has been reported repeatedly.[8] As will be seen in chart 2, the preservation of prothrombin in liquid plasma at 4 C. is better than that reported for whole blood. The optimal method for preservation of prothrombin is again maintenance in the frozen state. Plasma dried from the frozen state and restored with sterile pyrogen-free distilled water or plasma stored at room temperature (about 25 C.) for even short periods shows almost complete loss of prothrombin. It has been suggested[9] that prothrombin may be lost in the process of drying owing to the removal of carbon dioxide with resultant increased alkalinity.

DOSAGE OF PLASMA

It may be stated that the amount of plasma usually administered is smaller than the quantity necessary for best results. In referring to the dosage of plasma, it is far better to speak of the grams of protein contained in each dose rather than the total amount of fluid employed. This is desirable because of the wide variations in the amount of sodium citrate and other solutions added to the whole blood at the time of collection, with resultant variations in the dilution of the plasma. If the protein content should be accepted as the standard

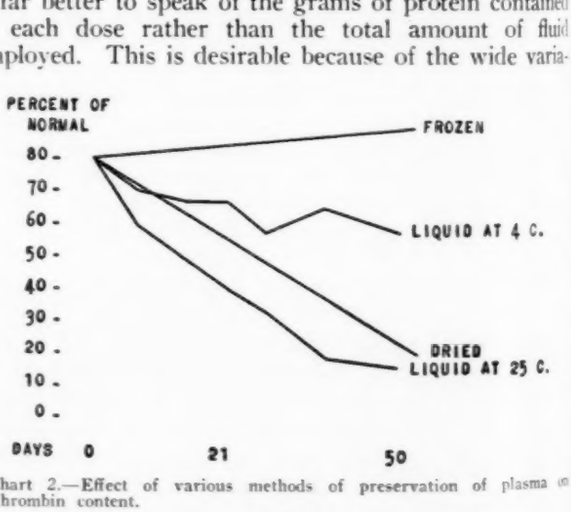


Chart 2.—Effect of various methods of preservation of plasma on prothrombin content.

5. Scudder, John: Studies in Blood Preservation: The Stability of Plasma Proteins, Ann. Surg. **112:** 502 (Oct.) 1940.
6. Strumia, McGraw and Reichel: III. Freezing of Plasma and Preservation in the Frozen State.[4]
7. Strumia, M. M.; Wagner, J. A., and Monaghan, J. F.: The Intravenous Use of Serum and Plasma, Fresh and Preserved, Ann Surg. **111:** 623 (April) 1940.
8. Rhoads, J. E., and Panzer, L. M.: The Prothrombin Time of "Bank Blood," J. A. M. A. **112:** 309 (Jan. 28) 1939. Lord, J. W., and Pastore, J. B.: Plasma Prothrombin Content of Bank Blood, ibid. **113:** 2231 (Dec. 10) 1939.
9. Flosdorf, E. W., and Mudd, Stuart: The Procedure and Apparatus for Preservation in the Lyophile Form of Serum and Other Biological Substances, J. Immunol. **29:** 389 (Nov.) 1935.

of dosage, it would allow for better understanding and comparison of reports from various groups of workers; it would render unnecessary a statement of the amount of diluting solution employed, and finally it would permit the clinician to know exactly what to expect out of any given plasma preparation.

In cases of shock with or without hemorrhage the usual initial dose of plasma is 35 to 36 Gm. of plasma proteins, corresponding to 500 cc. of undiluted plasma. Additional doses may be required up to two or three times this quantity. The dose for any patient is, of course, the amount needed to raise and maintain an adequate volume of circulating blood as evidenced by satisfactory pulse, blood pressure and blood concentration readings.

Burns require large amounts of plasma protein, depending on their extent. The immediate indication for plasma in burns is usually that of shock, with correspondingly similar criteria for dosage. However, in extensive burns the prolonged and severe loss of plasma proteins and the resulting severe hypoproteinemia necessitate frequently repeated plasma transfusions. The hypoproteinemia is often particularly severe beginning from the third day. Plasma with a full content of complement would seem preferable in such cases in view of the frequency of infection of the denuded areas. The dosage of plasma in burns, beyond the original shock period, is best determined by the plasma protein content of the circulating blood, by the urinary output and by the occurrence of edema. A patient with severe burns extending over approximately two thirds of the body surface required approximately 700 Gm. of plasma protein (or 10 liters of plasma), the equivalent of forty lots of blood of about 500 cc. each. The patient made a good recovery.

Clinical Indications for Plasma Therapy and Elements of Plasma Most Needed

Clinical Indications for Plasma Therapy	Elements of Plasma Most Needed
Shock (with or without hemorrhage)	Total Protein Content
Burns	
Hypoproteinemias	
Cerebral edema (concentrated plasma preferred)	
Hemorrhagic diseases (especially hypoprothrombinemia and hemophilia)	Prothrombin and other undetermined element or elements
Infections (including prevention of childhood exanthematic diseases)	Specific and nonspecific antibodies (complement)

The more chronic severe forms of hypoproteinemia may require relatively enormous amounts of plasma proteins to effect any significant change in the amount of circulating protein, although clinical results are often evident after much smaller doses. The lag in the rise of the patient's plasma protein is likely due to the tissue hypoproteinemia. The commonest forms of chronic hypoproteinemias are due to (1) excessive losses, as in nephrotic states; (2) diminished absorption, as in starvation and many gastrointestinal diseases; (3) faulty liver function, as in cirrhosis, and (4) a combination of any of these causes.

Thus a patient suffering from subacute hepatitis required 518 Gm. of plasma proteins, or 7,500 cc. of undiluted plasma, to tide him over a period of nineteen days including an extensive operation to relieve an obstruction at the ampulla.

A patient suffering from nephrotic hypoproteinemia in the course of a chronic nephritis required 710 Gm. of plasma proteins, or 10,000 cc. of undiluted plasma, in a period of twelve days. The results were satisfactory.

The dosage of plasma, when it is used for its content of specific and nonspecific antibodies, is a matter based mostly on clinical appraisal, and consequently the proper amount to be used is difficult to estimate accurately. In prolonged severe infections the role of plasma in correcting hypoproteinemia must be considered in addition to any effect of specific and nonspecific antibodies.

For prophylaxis or modification of many infectious diseases, especially measles and scarlet fever, the use of pooled adult plasma has given gratifying results. The average dose varies from 0.7 to 3.5 Gm. of plasma proteins, or from 10 to 50 cc. of undiluted plasma.

Hypoprothrombinemia is usually corrected well beyond the danger limit by the transfusion of 35 Gm. of protein (500 cc. of undiluted plasma). For routine use in difficult deliveries we keep on hand bottles of 12 to 15 cc. of undiluted frozen plasma, containing 0.85 to 1 Gm. of plasma proteins made from a pool of several fresh bleedings. This allows an easy means of raising the prothrombin level of the newborn in the shortest possible time.

SUMMARY AND CONCLUSIONS

1. Regardless of the means of preservation employed, plasma must be safe from the standpoint of (*a*) bacterial contamination, (*b*) presence of flocculent protein precipitates and (*c*) unusually high isoagglutinin titer.

2. The manner of preservation greatly influences the survival of various specific elements of plasma. To summarize: (*a*) Preservation of plasma in the liquid state at room temperature (approximately 25 C.) causes very little flocculation but rapid loss of prothrombin and complement. It should be filtered before use, and the danger of rapid growth of a chance contamination must also be kept in mind. The value of such material is limited almost entirely to the total protein content. (*b*) Preservation of plasma in the liquid form at 4 C. maintains a fair quantity of prothrombin and complement, for a period of approximately fifty days, but causes maximal flocculation within a few hours. Filtration is essential and the danger of bacterial growth from a chance contamination is not eliminated. (*c*) Preservation of plasma in the dried state effectively prevents bacterial growth and flocculation, but the regenerated material has lost almost all the prothrombin and a portion of the complement when drying involves quantities of 250 and 300 cc. It need not be filtered and permits concentration if desired, but it is of little value for hypoprothrombinemia. (*d*) Preservation in the frozen state prevents bacterial growth and flocculation and at the same time insures almost complete preservation of all specific elements, including prothrombin and complement. After proper thawing it need not be filtered, and the therapeutic value is practically equal to that of freshly prepared plasma. Thawing must be rapid in the water bath at 37 C., and thereafter, until administered, the liquid plasma must be kept at room temperature.

3. The loss of essential elements occurring with preservation of plasma in the liquid state or in the dried form obviously limits the therapeutic application of plasma thus preserved. Plasma maintained in the frozen state and properly thawed is almost identical to the original material.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FOWLER AND BARER AND DRS. STRUMIA AND MCGRAW

DR. CHARLES A. DOAN, Columbus, Ohio: I have been interested in this problem of the reaction of the donor to the giving of blood for either plasma or whole blood transfusion purposes. It is important to recognize both psychic and physical factors which influence the immediate reaction in the individual donor. The amount of blood which may be removed without signs or symptoms of shock varies widely from donor to donor, and in the same donor at different times. Dehydration, extreme physical fatigue and mild upper respiratory infections definitely condition the donor's immediate response. In the normal, healthy, rested adult Dr. Moore and I have shown by blood volume studies immediately before and after donations an astonishingly prompt and rapid plasma replacement from the tissues with restoration of the original total blood volume within a few minutes or at most a few hours. Conversely, the average recipient shows an equally prompt displacement of plasma, commensurate with the new increment of cells received by blood transfusion, confirming the tendency to relative stability of total blood volume in each individual through the compensatory interchange of intravascular and extravascular body fluids. When these donors are studied in terms of the formed elements of the blood, as reported by Drs. Fowler and Barer, a much more variable recovery period is observed. Incidentally, one must not forget to discount technical and vasomotor factors in the interpretation of any single blood estimation. Drs. Fowler and Barer cite one donor who did not show complete cellular and hemoglobin reequilibration for ninety-eight days, as contrasted with only eighteen days required by another. There may be a critical level of iron reserves in the tissues of the body, which does not become evident until some such extra demand is made. Dr. Moore and I have shown that if the plasma iron is low, as for example in a mild hypochromic microcytic anemia, there will be very slow regeneration of hemoglobin following blood loss because of the lack of available iron reserves for the regenerative synthesis of hemoglobin. It is this same principle, which we apply in the treatment of polycythemia vera, when, after repeated venesection, erythropoiesis may be observed to have diminished appreciably coincident with the development of a low plasma iron and hypochromic microcytic red cells. Of course that is just what must be avoided in persons who generously donate blood for transfusion. Drs. Fowler and Barer have clearly demonstrated that iron, supplemental to the ordinary diet, will facilitate hemoglobin regeneration in the average healthy donor. If this is true for the male, it is doubly true for the mature menstruating female in my experience. The giving of iron routinely as a postdonation procedure would therefore seem to me to be desirable in most men and essential in all women donors.

DR. PAUL I. HOXWORTH, Cincinnati: The most important contribution Drs. Strumia and McGraw have made is their report of results as to the prothrombin content of dried plasma, as opposed to frozen plasma. I have one question: Since the results in determination of prothrombin content are so variable when one uses different methods, might it not be possible in the future that they may alter their conclusion as to the prothrombin content of dried plasma or change some step in the process which will preserve prothrombin better? As a result of the careful study of the effects of the various technics and methods for the proper preservation of plasma by Drs. Strumia and McGraw and a number of other workers, there is no doubt that a valuable and safe blood substitute is being developed. A subject of equal importance is the making of this product available in the hospital of average size which holds no research subsidy. This institution is faced with the problem of supplying plasma by one of three methods: (1) by producing its own, (2) by purchase from a commercial house, (3) by participation in a plasma center supported by a group of hospitals. The first method, that of producing its own, presents the obstacle of cost. The expense of suitable personnel, equipment and adequate control of technics required to observe the best known standards of safety, which have been defined by Dr. Strumia and other workers, and of the collection, pooling, redistribution, processing and preservation is certainly great. The second method, that of purchase from the commercial house, is even more prohibitive to the average patient, when amounts indicated in various clinical conditions often reach from 1,000 to 2,000 cc. or even more per patient. Not many physicians have patients who can afford from $200 to $400 or more for parenteral proteins. The third method, that of establishing a plasma center through the cooperative effort of a group of hospitals, offers much promise. Duplication of costs of equipment, personnel and operation is avoided. The ultimate expense of the product is reduced when friends and relatives of patients may serve as free blood donors. In addition, the medical direction of an organization of this kind can be readily secured on a volunteer basis among physicians who are interested both in having the advantages of a plasma center for their community and in contributing to improved knowledge concerning the entire subject. The university and general hospitals should lead the way in the development of such plasma centers.

DR. WILLIS M. FOWLER, Iowa City: With regard to the question which Dr. Doan raised as to the menstrual blood loss in female donors, we did not take that into consideration; but previous work has shown the average blood loss during the menstrual period to be about 50 cc. That will undoubtedly affect the recovery period to some extent and may account for the difference in the rate of recovery in the male and in the female. With regard to his second question as to varying dosages of iron, I do not feel that a larger dose of iron and ammonium citrate would cause a more rapid regeneration of hemoglobin under these circumstances than did the dose which we used. I believe that ferrous sulfate in a smaller dose would have the same effect as the iron and ammonium citrate. I feel that iron is not acting merely as a form of replacement therapy in these cases but that there is at least some degree of stimulating effect from the administration of the iron. We have given these blood donors iron after the first donation and then withheld it after a second and a third donation and then given it again after subsequent blood donations. The response to a second administration of iron is never quite as great as that obtained the first time it is given.

DR. MAX M. STRUMIA, Bryn Mawr, Pa.: I endorse Dr. Hoxworth's comments on the plasma center. It is only by the establishment of community collecting and distributing centers that an adequate supply of plasma will be made available not only for civil use but for use in emergencies, both local and general. We are trying to establish such a center, and many others are being established throughout the country. Concerning the question of prothrombin determination and prothrombin preservation in the dried state, I would say it is most essential, in order to obtain reliable data on the prothrombin time, that a technic be strictly standardized. We have used throughout our work a modification of the Quick method. The modification is especially directed to maintaining a set of rigidly enforced standards for both the prothrombin and the thromboplastic suspension. We have found that the best and by far the cheapest way to maintain both prothrombin standards and the thromboplastic suspension at a perfectly even keel is to keep both of these materials in the frozen state in any ordinary freezing cabinet. Thus for periods anywhere from fifteen days to four weeks and more, under certain conditions, one can be assured of having a perfectly unchanged prothrombin standard, as well as a perfectly unchanged thromboplastic solution, so that when one is doing serial determinations one is always using exactly the same unit to measure the thrombin time. Concerning the question Is there anything that may lead us to hope that in the future better preservation of prothrombin will be secured in plasma preserved in the dry state? We have about half completed studies that make us feel that a solution of the other problem is at hand. The loss of prothrombin in the dried plasma is quite likely connected with the greatly increased alkalinity of dried plasma. This increased alkalinity is due to two factors: first, the addition of sodium citrate to prevent coagulation; second, and perhaps a more important factor, the loss of serums during the drying period owing to the fact that we work under a high vacuum. If we regenerate plasma, as it is usually done, with plain, ordinary, sterile distilled water, the p_H of the resulting solution is somewhere around 7:8 to 8:1.

If we buffer our sodium citrate, or if we regenerate our plasma in sterile water which has been saturated with carbon dioxide, we may obtain a remarkable preservation of prothrombin. When one regenerates plasma dried from the frozen state with distilled water which has been saturated with carbon dioxide one obtains a preservation in the neighborhood of 55 per cent. We are still below the optimal obtained by preservation in the frozen state, but since dried plasma has advantages under definite conditions we are hoping to be able to offer a solution of this problem by either one of these two methods mentioned.

CHRONIC ULCERATIVE COLITIS

A CLINICAL SUMMARY OF THE MANAGEMENT IN NINE HUNDRED AND TWELVE CASES

M. H. STREICHER, M.D.

CHICAGO

As in all scientific pursuits, in clinical medicine one invariably becomes tenaciously attached to the study of some entity yet unconquered. After many years physicians are still searching for a specific treatment for one of the most dreadful diseases in the abdomen, chronic ulcerative colitis. In this writing an attempt is made to outline and correlate the experiences I have had with 912 cases.

The essential diagnostic features that may influence the decision as to the type of management to institute are (1) the clinical history, (2) the pathologic conditions seen on proctoscopy and (3) the roentgenologic description of the extent of the disease and the degree of anatomic changes produced (table 1).

The important details related in any clinical history of an abdominal ailment have been well written up many times and need not be repeated.[1] Expert understanding and evaluation of the extent of the lesion of the mucosa of the colon is the most essential single factor in the determination of the type of management to pursue and of the prognosis. For instance, it is important to understand that a narrow lumen observed proctoscopically may mean severely edematous mucosa and not necessarily an absolutely irreparable anatomic constriction due to fibrosis. The treatment will of necessity be vitally different.

The fact that little new has been added to the establishment of specific therapy of chronic ulcerative colitis makes detailed discussions on the subject repetitious. There is, however, knowledge derived in recording large experiences grouped and summarized. The management in general resolves itself into a clearcut differentiation between acutely ill patients needing hospital care and chronically ill patients requiring occasional ambulatory treatment. For the acutely ill patient the main line of attack is chiefly supportive. It is essential to maintain good nutrition, to bolster the blood level by transfusions and to support the defensive mechanism by the administration of a high caloric and high vitamin diet.[2] All this must be done quickly to prevent a severe loss of body fluids, to stem a progressive decline in blood proteins and to combat severe toxemia.

The chronically ill patient is concerned mainly with maintaining well-being and avoiding recurrences. He is resigned to the fact that he must learn to live with the disease and therefore wishes to be armed so that a useful life may be followed. An ambulatory patient must be on guard against sudden seasonal changes and against radical changes in the diet and must have sufficient rest. Nutrition must be maintained and foci of infection systematically attended to. In table 2 an outline of the management is given.

The introduction of therapy with sulfanilamide and its derivatives was received with relief, but, while almost miraculous results have been recorded in some isolated instances, use of these drugs in the treatment of chronic ulcerative colitis is hazardous.

Their specificity of action on infections due to Streptococcus hemolyticus has been established, but, while a small percentage of patients with chronic ulcerative colitis do harbor this streptococcus, the predominant bacterium present in the stool and obtained on culture is Streptococcus viridans. Any beneficial results obtained with any of these compounds in the treatment of chronic ulcerative colitis must therefore be considered incidental or secondary, due to an indirect action of the drug.

TABLE 1.—*Essential Diagnostic Features*

1. Clinical history
2. Proctoscopic data
Pathologic changes in colon
A. Inflammation and edema
B. Abscess formation (miliary)
C. Diffuse granular mucosa
D. Fibrous constriction of lumen
3. Roentgen data (barium sulfate enema)
A. Constriction of lumen of colon, longitudinal and transverse
B. Absence of haustra

TABLE 2.—*Management*

1. Acute stage (hospital care)
A. Bed rest
B. Blood transfusions (250 to 500 cc.)
C. Diet (basal plus high vitamin content including vitamin K)
D. Powdered opium, dilute hydrochloric acid, liver extract
E. Sitz bath, an oxycholesterol-petrolatum ointment, phenobarbital at bedtime
2. Chronic stage (patient ambulatory)
A. Diet high in vitamins
B. Powdered opium, dilute hydrochloric acid, liver extract, phenobarbital at bedtime, ferrous sulfate
C. Sulfanilamide derivatives
D. Vaccine (polyvalent)
E. Removal of foci of infection

My experiences concern the use and evaluation of sulfanilamide and two of its derivatives (table 3).

The results with sulfanilamide proved disappointing. The drug was given to 12 acutely ill patients and 5 chronically ill ones. All the acutely ill patients became considerably upset; vomiting ensued, diarrhea became exaggerated, blood appeared in the stool in larger amounts than usual and cramping in the abdomen became severe. Two ambulatory patients improved temporarily but with prolonged administration of the drug became very ill. At present I am dubious about employing sulfanilamide again in the treatment of chronic ulcerative colitis.

Azosulfamide merits a more favorable position. It is less toxic, it is tolerated better and it has the added advantage that, if desired, it may be administered parenterally during periods of suspension of oral administration. Azosulfamide was used in 18 cases of acute involvement with Str. viridans predominating and in 4 cases in which Str. hemolyticus also appeared in the

From the Research and Educational Hospital and Grant Hospital.
Read before the Section on Gastro-Enterology and Proctology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Soper, H. W.: Chronic Ulcerative Colitis, Ann. Int. Med. **1**: 313-350 (Nov.) 1927. Chisholm, A. J.: Symptomatology and Treatment in Chronic Ulcerative Colitis, Colorado Med. **25**: 28-30 (Jan.) 1928.
2. Larimore, J. W.: Chronic Ulcerative Colitis: Observations on Treatment by Diet, Tr. Am. Gastro-Enterol. A., 1927, pp. 298-318.

culture. Good results were obtained in 4 cases in which Str. hemolyticus was present in the culture. In the majority of the cases in this group there was no improvement with azosulfamide therapy. Such after-effects as eruptions on the skin, nausea, vomiting, jaundice and diarrhea were observed on many occasions.[3]

TABLE 3.—*Management with Sulfanilamide and Its Derivatives* *

	Type of Colitis		Results		
	Acute	Chronic	Good	Fair	Poor
Sulfanilamide	12	5	2C†	1C	12A‡ 2C
Azosulfamide	22	14	4A 2C	1A 1C	17A 11C
Sodium sulfathiazole	9	6	3A	4C	6A 2C
Patients in each group	43	25	7A 4C	1A 6C	35A 15C
Total number of patients	68		11	7	50

* Summary: Sulfanilamide derivatives are most advantageous in cases of mild ulcerative colitis but too toxic in cases of acute involvement. Sulfathiazole gives the best results. Suggestion: The derivatives deserve a trial in the presence of Str. hemolyticus.

† C, chronic ulcerative colitis.

‡ A, acute ulcerative colitis.

As far as can be judged now, sulfathiazole seems to be the least toxic of the drugs for use in the treatment of chronic ulcerative colitis. It is not entirely free of toxic effects and there are individual idiosyncrasies, but nevertheless it is most advantageous. This drug, too, has demonstrated that sulfanilamide and its derivatives are most applicable in cases of mild ulcerative colitis and give the most promising results when Str. hemolyticus is present in the stool culture. Sodium sulfathiazole may be given intravenously to advantage if oral administration is suspended because of intolerance. The dose of the individual derivatives varies: with azosulfamide results have been obtained with a daily dose of 30 to 60 grains (1.9 to 3.8 Gm.), while with sodium sulfathiazole a dose of 1 Gm. every four to six hours for seven days may prove sufficient in alleviating an exacerbation of diarrhea. I have observed no advantage in the use of maximum doses.

Frequent observation of the patient's clinical course is essential to proper management. The most accurate index of the progress of the disease, however, is the amount of healing accomplished in the mucosa of the colon. This is determined generally by the clinical improvement in the symptoms but more accurately by repeated proctoscopic studies.[4] My associates and I

TABLE 4.—*Proctoscopic Follow-Up Study*

Type of Patient	Number of Patients Studied Yearly 1	2	3	4	5	6	7	8
Unimproved	22	15	11	8	5	6	4	4
Improved	30	21	24	23	21	16	14	18
Cured	0	4	5	3	6	4	5	6
Dead	1	2	1	2	1	0	0	1
Total	53	42	41	36	33	26	23	29

Grand total—283

have reexamined 283 patients (table 4) over a period of eight years and have classified them as unimproved, improved, cured or dead. The changes seen in the mucosa on reexamination were recorded and bacteriologic cultures were made so that a correlation of the proctoscopic findings might be established.

In the course of my studies I have learned that 20 per cent of the patients are eventually cured, 60 per cent are definitely improved, 17 per cent are unimproved or have complications and 3 per cent die regardless of the type of treatment instituted.

The patients who cause most concern are the ones who become progressively worse regardless of the type of conservative management chosen.

True enough, conservative management at best is prolonged, tedious and difficult, gives no assurance at any stage that attacks will not recur and contains no absolute promise of a permanent cure. Of course, in cases of early, mild or moderately advanced involvement the results are more encouraging (20 per cent of the patients are cured and 60 per cent improved).

At present the most accepted opinion as to the surgical management of chronic ulcerative colitis is that if some drainage operation is undertaken an ileostomy is the procedure of choice.[5]

To get a cross section of opinion on this problem, I conducted a survey by mailing a questionnaire to one hundred gastroenterologists, proctologists and surgeons. In table 5 an abstract of the survey is presented.

The survey showed that of 286 ileostomies 11 were followed by a reanastomosis and that only 4 of the

TABLE 5.—*Survey on Ileostomy*

	Reanastomosis		Progress		
No.	No.	Period	After Reanastomosis	After Ileostomy	Indications
15	2	1-1½ yr.	1 fair	1 good	Polyposis, stricture
42	0	.....	.....	7 died	Irreparable damage; ileostomy a preparation to colectomy
35	0	.....	.....	1 died	Never in acute ulcerative colitis
8	0	.....	.....	.....	Colitis resistant to all treatment; return of disease
4	1	2 yr.	1 poor	1 died 1 satisfactory	Polyposis, hemorrhage
5	0	.....	.....	.....	Hopeless; male patients only
84	5	6 mo. 2 yr.	1 good	2 died 1 poor	Acute colitis; few days of no response; obstruction
89	3	1 yr.	1	2 died	Obstruction
4	0	.....	.....	1 died	Stricture
286	11	.....	4	14 died	

patients made good or fair progress after the reanastomosis. Fourteen of the patients died before a reanastomosis was performed. The consensus was that ileostomy is indicated in the presence of polyposis, anatomic stricture of the colon beyond repair, abscess, malignant neoplasm, absolute obstruction, perforation or hemorrhage.

There were two sharply defined opposite opinions as to whether ileostomy should be performed during an acute exacerbation of chronic ulcerative colitis.

Among the reasons given why reanastomosis is not advisable was that the original disease invariably recurs. Another suggestion made was that ileostomy is not successful because it is not performed early enough in the course of the disease. Our experience shows (1) that the indications for ileostomy as given in the survey are satisfactory, (2) that patients with the disease in the acute stage should not be operated on, (3) that the disease recurs in the great majority of patients if reanastomosis is accomplished and (4) that it would be unwise to perform ileostomy during the

3. Streicher, M. H.: Clinical Course of Chronic Ulcerative Colitis (Based on 7,662 Proctoscopy Examinations), Am. J. Digest. Dis. **5**: 362 (Aug.) 1938.

4. Streicher, M. H.: Proctoscopic Examination and Diagnosis and Treatment of Diarrheas, Springfield, Ill., Charles C. Thomas, 1940, p. 89.

5. Rankin, F. W.; Bargen, J. A., and Buie, Louis A.: The Colon, Rectum and Anus, Philadelphia, W. B. Saunders Company, 1935, p. 278.

early stages of the disease because in the early stages one can accomplish a cure or definite improvement without ileostomy.

Therefore, as the results after ileostomy are so poor, one would strongly suggest that conservative management be maintained as the treatment of choice and that ileostomy be reserved for the patient in whom the colon has undergone irreparable damage.

185 North Wabash Avenue.

ABSTRACT OF DISCUSSION

DR. MARTIN S. KLECKNER, Allentown, Pa.: The clinical history, the findings on proctosigmoidoscopic study and roentgenologic studies tell us how extensive the pathologic change in the colon has become. This is repeatedly necessary if we wish to note the progression or ameliorization of chronic ulcerative colitis. The problem of therapy is still unsatisfactory. Not knowing whether this disease is due to avitaminosis, a streptococcic infection or otherwise, we give these patients varied types of treatment, primarily medical, and often advise some surgical procedure as ileostomy in an effort to sidetrack the infection or remove it by colectomy. Our results have been gratifying at times, but in these cases, in 20 per cent of which operation is performed, we are disappointed by the end results. Every patient with chronic ulcerative colitis must be forcibly impressed with the importance of following the strict routine. It has been my practice at the onset to make repeated stool examinations in all cases in which any ulcerative process, other than a malignant growth, exists. Even in the absence of definite bacilli, cocci or amebas in chronic ulcerative colitis I routinely give these patients a course of emetine hydrochloride (hypodermically) ½ grain (0.03 Gm.) twice a day for four days, followed by carbarsone (by mouth) in 4 grain (0.25 Gm.) capsules twice a day for ten days. After the last capsule and an interval of two weeks, the patient again receives the same treatment. Iron by mouth, vitamins B, C and D and calcium gluconate are always prescribed. The patient is placed on a low residue high caloric diet, given plenty of fluids, and told to inject 1 to 2 ounces of 1 to 5 per cent zinc peroxide or 6 per cent bismuth subgallate in olive oil into the rectum once or twice daily (after preliminary cleansing with warm saline solution). The patient is urged to retain the injection for at least an hour. When possible rest in bed, especially in the acute cases, is an important requisite. My apparent successes and failures correspond in almost like percentage with those of Dr. Streicher. The sulfonamides have been tried during the past year in a series of 12 cases with the following results: Two cases (six and eight months) showed a phenomenal clearing up of all symptoms by the use of sulfathiazole. One case (one and one half years) became entirely clear of ulceration. Eight cases showed no response to sulfonamide derivatives and it was necessary to stop its administration in 2 because of nausea. Sulfonamides should be tried in special cases, but the results obtained must not be too enthusiastically received.

DR. ZACHARIAS BERCOVITZ, New York: Dr. Streicher's results in chemotherapy are essentially in agreement with my own. He has called attention to the astounding results of treatment in some isolated instances. When dealing with a progressive disease such as chronic ulcerative colitis, we have no specific cure and, therefore, therapeutic results must be interpreted cautiously. The criteria for evaluation of any method of therapy in ulcerative colitis must include the following: 1. Before any new method of therapy is applied, the patient must be placed on the basic regimen and must be under observation over an adequate period of time. 2. Five years' observation under the new method of therapy is necessary. This allows for patients who improve spontaneously or who seem to improve with change of season or treatments. Also it allows sufficient time to secure an adequate series of cases. The five year rule gives the doctor time to discover whether or not his enthusiasm for any special therapy was justified. 3. Enough control cases must be treated on the basic regimen over the same length of time in order to allow for individual variations in the disease. The basic regimen which I observe in chronic ulcerative colitis is essentially the same as Dr. Streicher's. Briefly it involves blood transfusions, dextrose infusions given in physiologic solution of sodium chloride and absolute rest in bed. 4. A diet high in proteins, vitamins and calories is prescribed, to be served in attractive form and given in adequate quantities. 5. Hydrochloric acid and pepsin for protein digestion are essential. 6. Adequate vitamins must be given. Liver extract does not cure chronic ulcerative colitis, but it should be included as a valuable adjunct in every regimen. The surgical problem in chronic ulcerative colitis is fundamentally to determine just when a patient should be operated on. We have not had the courage to face the stark reality that with the exception of a few cases which seem to improve spontaneously the disease is progressive in spite of the best management. We procrastinate until the patient's morale and vitality are gone and complications such as stricture or perforation force surgical intervention. Under these conditions the results of surgery cannot be what they should be, and restoration of bowel function is jeopardized. As soon as the true nature of the disease is established, ileostomy should be performed and then we may be able to offer some of the patients some hope of recovery.

DR. ISAAC R. JANKELSON, Boston: I have treated colitis in the same way as the author; however, I cannot record a 20 per cent cure either in the early or in the advanced stages of ulcerative colitis; in fact, I do not speak in terms of cure; I speak in terms of remissions for several reasons. The first reason is that no definite criteria exist by which one can establish a long distance prognosis in any case. Second, I have seen only too often patients who returned to the hospital with a recurrence often worse than the original attack. I have tried various so-called specific remedies proposed at various times, including the sulfonamide derivatives. My experience was that a few cases responded excellently, some fairly well, but the vast majority remained about the same; in fact, I know of only one cure of ulcerative colitis, and that is the surgical extirpation of the colon. In my own experience the operative mortality of an ileostomy is about 18 per cent and that is approximately the mortality reported from other clinics. Since the operation is technically simple, I believe that this mortality must be ascribed to the medical man and not to the surgeon, because the patient is sent to the surgeon altogether too late, at a time when even a simple surgical procedure will probably terminate fatally.

DR. J. ARNOLD BARGEN, Rochester, Minn.: I should like to put my remarks in the form of two questions: 1. Would it not be best to classify chronic ulcerative colitis according to etiologic types? 2. Would it not be best to attempt to treat these etiologic types specifically? I should like to amplify these questions. In recent years we have recognized a streptococcic ulcerative colitis, an amebic ulcerative colitis, a tuberculous ulcerative colitis, an ulcerative colitis due to vitamin deficiency, an ulcerative colitis due to the virus of lymphopathia venereum and a large number of patients with ulcerative colitis of unknown etiology. In my experience the streptococcic type constitutes by far the largest number of cases. The group in which the cause is still unknown has become smaller. Allergy plays a part in some cases of ulcerative colitis but I am not yet convinced that it is an etiologic factor in itself. Nevertheless, just as in infections in any other organ, the cause should be ferreted out first and the treatment instituted accordingly. I get the impression from the discussions that the tendency is to treat all forms of ulcerative colitis as if they were a single entity. Results of treatment will be infinitely better if this consideration is adhered to. A word about surgery: Patients with the streptococcic type of ulcerative colitis will rarely require surgery, but if and when the time comes for this because of one or many of the serious complications that occasionally afflict these patients or because of a very advanced disease, an ileostomy will be the only surgical maneuver to be considered. However, in the patients with ulcerative colitis of indeterminate etiology involvement of the bowel is often segmental and here ileocolostomy and subsequent partial resection of the colon may result in relief.

DR. DAVID J. SANDWEISS, Detroit: I have recently encountered a case of severe ulcerative colitis of long duration, treated without success by the usual methods, but elimination of milk from all elements of the diet resulted in improvement.

Milk always initiated an attack. I considered this a case of milk allergy. I wonder how many of Dr. Streicher's patients were found to be allergic to certain foods which, when removed, resulted in improvement of the condition.

DR. RACHELLE SELETZ, Los Angeles: I should like to voice my protest against the tendency to omit local therapy in colitis. I feel that a great adjunct to the therapy of certain types of colitis is lost here. It may sound reactionary, because in the past there have been a lot of deleterious effects from local therapy. That was because destructive medications, such as silver nitrate, were used. But in view of the fact that a lot of purulent material can collect behind the valves and because of the spasticity, the ulcerated surfaces are constantly touching one another and are further traumatized. I feel that if we can apply such soothing medications as mercurochrome (aqueous solution) and liquid petrolatum, we shall use them not as bactericidal agents but as bacteriostatic factors to seal over and protect the mucosa. At the same time these medications are inimical to bacteria and other organisms that may invade the traumatized mucosa. In this way we shall gain a lot by protecting the bowel from further injury.

OPERATIVE TREATMENT OF CEREBRAL PALSY OF SPASTIC TYPE

WILLIAM T. GREEN, M.D.
AND
LEO J. McDERMOTT, M.D.
BOSTON

In surgical procedures directed toward chronic disease impressions of results are often misleading. It is necessary to pause at intervals and do end result determinations on groups of cases to make decisions as to the efficacy of various procedures. It has seemed wise to us to review the orthopedic operations for cerebral palsy of the spastic type which have been done during the preceding fifteen years, 1925-1940, at the Children's Hospital in Boston. In addition to these cases, we have added certain ones in which operations were done by one of us at the Peter Brent Brigham Hospital.

The cases included are those which might be called by the orthopedist spastic paralysis and by the neurologist cerebral palsy of the pyramidal tract type. For practical purposes, we have emphasized the term spastic paralysis, since spasticity from whatever origin—intracranial or spinal—was the criterion by which patients were placed in this series.

In all there were 421 operations on 160 patients, the majority of whom were under 12 years of age. Only 20 were over this age at the time of the procedure. In 88 per cent of the operations sufficient data were available for an evaluation of the end result. In 219 of the 421 operations we were able to evaluate the result by a physical examination during the current year. The average follow-up interval was six years and eleven months.

Among the 160 cases there were 9 instances of monoplegia, 73 of hemiplegia, 51 of paraplegia, 2 of triplegia and 25 of quadriplegia.

Seventy-nine of the patients were considered mentally normal and 27 questionably so. Thirty-seven were definitely retarded and 30 were feebleminded.

This study was aided by a grant from the Children's Bureau of the United States Department of Labor.

Read before the Section on Orthopedic Surgery at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

From the Orthopedic Service of the Children's Hospital, the Peter Bent Brigham Hospital and the Department of Orthopedic Surgery, Harvard Medical School.

Before the data are considered from this survey, it is well to consider our attitudes regarding the position of surgical procedures in the treatment of spastic paralysis, since in general the patients were chosen for operation with these considerations in mind.

POSITION OF SURGERY IN TREATMENT

Operations, important as they are, should be considered as an adjunct to the general plan of therapy. By the nature of the process which interferes with the normal motor pathways, the patient is forced to depend on accessory tracts and to adjust his motor mechanism to an awkward type of innervation. Training of this mechanism is the primary treatment, whether directed or undirected. Surgical procedures, by reducing deformity, establishing better balance of muscle power, decreasing the spasticity of muscles and simplifying the problem of control, are often an indispensable part of the process of rehabilitation. In many cases, however, surgical procedures are not indicated either by the nature of the process or by the other delimiting factors.

Certain basic criteria must be established before decisions are made regarding an operation, all dependent on a thorough evaluation of the patient. The type of paralysis and the degree of motor inadequacy must be classified as accurately as possible. Occasionally this may be difficult, as in the differentiation between true athetosis and certain instances of spastic paralysis with definite accessory motor overactivity. Ordinarily observation for a short period enables the differentiation to be made.

It should be determined whether the patient has sufficient sense of balance to allow the intended result. If a patient cannot maintain a sitting position it cannot be expected that operations on the lower extremities will allow him to walk. There is ordinarily no need for correction of deformities in the lower extremity unless walking can be attained; the deformities will only recur.

The mental status of the patient is an important consideration in deciding whether an operation should be done and what procedure should be performed. Operations on the upper extremities are rarely indicated on patients who have gross mental deficiency, nor are finer adjustments in the motor mechanism of the lower extremities to be attempted on such a patient. However, operations should be performed on patients who cannot walk if it is felt that they may be made to walk either alone or assisted, even in the presence of well defined feeblemindedness. The ability to walk facilitates their care, even if they are totally dependent in other ways.

For patients of low mental status definitive procedures in which the factor of muscle training is less important should be chosen. Prolonged expensive training and hospitalization are not indicated.

A detailed examination of the muscles should be made. Not only must the spastic muscles be recognized and charted but, as emphasized by Phelps,[1] the power of the other muscles must be evaluated and their degree of control noted.

The importance of evaluating the power of nonspastic muscles is emphasized by the fact that, as pointed out by Phelps,[1] certain antagonistic muscles may show great weakness and, for practical purposes, even complete flaccid paralysis. This is particularly true in the

1. Phelps, W. M.: The Care and Treatment of Cerebral Palsies, J. A. M. A. **111**:1 (July 2) 1938.

muscles controlling the distal ends of the extremities. A flail paralysis may arise from a cerebral lesion, as pointed out by Fulton.[2] On the other hand, long continued deformity may of itself cause the stretched muscles to lose power, which power will return when the deformity is corrected. If there is actually a flaccid paralysis in the antagonistic muscles, merely relieving the spasticity will not solve the problem.

The age of the patient is a delimiting factor. A certain type of operation may be done as a temporary measure at a younger age to facilitate function, although it is anticipated that it will be followed by another when the patient is older.

In considering the operative approach in an individual case, one should remember that the correction of one deformity reduces the problem of the patient in his total motor control.

METHOD OF END RESULT EVALUATION

In this study primary attention was given to the classification of the result from individual operations, with secondary attention to the general effect. Three types of evaluations were made in all our cases.

TABLE 2.—*Lengthening of Heel Cord (Total Operations One Hundred and Twenty-Five)*

Result	Number of Operations	Per Cent
Excellent	12	11.2
Good	34	31.8
Fair	37	34.6
Poor	24	22.4
No examination	18	....

Rating of improvement in whole group:

Total	++++	+++	++	+	0	No Examination
125	18	40	25	11	13	18

Of those rated poor:
75% were in children in motor status 1 or 2
50% were in feeble minded children

6 secondary lengthenings were done:
2 good; 2 fair; 2 poor

14 patients had arthrodeses later

Operations were classified under "excellent," "good," "fair," "poor" and "no examination." For this purpose an objective standard was established as a result from each type of operation, based on the postoperative function. Space does not allow for the description of the criteria used in establishing these standards in each individual procedure.

The second classification was a rating of improvement, which was founded on a comparison of the final status with the initial one. This was recorded as $++++$, $+++$, $++$, $+$, 0 and no examination; 0 improvement indicated that the individual was unimproved and $++++$ indicated striking improvement.

As a further method of evaluation, patients were classified as to "motor status." This classification was based on the motor potentialities of the patient and took into consideration the amount of spasticity, incoordination, overflow responses and balance. Motor status 1 was the lowest classification and 5 was the highest. In this particular paper we shall refer to motor status 1 and 2 only.

OPERATIONS ON THE LOWER EXTREMITY

Of the 421 operations in this series, 379 were done on the lower extremity and 228 of these were done for deformities of the foot.

2. Fulton, J. F.: Paralysis of Cortical Origin: A Physiological Analysis of Flaccid and Spastic States in Monkeys and Chimpanzees, Proc. California Acad. Med. **4**: 1, 1933-1934.

Equinus due to spasticity and contracture of the gastrocnemius and soleus were the deformities most usually found, but deviations of the foot in a lateral direction (varus or valgus), deformities of the toes and weakness of the muscles of dorsiflexion complicated the problem in many instances.

TABLE 3.—*Neurectomy—Gastrocnemius—Stöffel (Total Operations Nineteen)*

Operation On	Result: Excellent	Good	Fair	Poor
Nerve alone	2	1	2	2
Nerve with lengthening of achilles tendon	0	0	2	2
Nerve with lengthening gastrocnemius, upper	0	4	2	2
Total	2	5	6	6

Rating of improvement in whole group:

Total	++++	+++	++	+	0
19	6	3	7	1	2

The criteria for an excellent operative result on the foot were active and passive dorsiflexion to approximately a right angle, no significant abnormality of weight bearing in a lateral direction and the ability to go up on tip toe. The maintenance of a take off is important. In many instances the general status of the patient precludes such a result.

Lengthening of Heel Cord.—Lengthening of the heel cord was done in 125 instances, in all by plastic lengthening (table 2). As may be noted, 12 of the operations were recorded as "excellent" and 34 as "good," in comparison with 37 which were graded "fair" and 24 "poor." A comparison of the "rating of improvement" shows that the patient in 13 instances was unimproved after the operation. Of those operations rated "poor," 75 per cent were on patients in "motor status 1 or 2," which is the lowest classification, and 50 per cent were on feebleminded children.

In 20 instances further operations were done to relieve the deformities of the feet. Six secondary operations for lengthening of the heel cord were carried out. Two of these were "good" subsequently, 2 "fair" and 2 "poor." After 14 of these operations it was found necessary to do an arthrodesis of the foot.

TABLE 4.—*Foot—Arthrodesis, Tendon Transplant (Total Operations Fifty-One)*

Operation	Total	Result: Excellent	Good	Fair	Poor	No Examination
Triple arthrodesis alone	23	5	6	10	2	0
Countersinking (Brewster)	7	3	3	0	1	0
Subastragalar arthrodesis	2	0	1	0	1	0
Wedge tarsectomy	2	2	0	0	0	0
Arthrodesis with tendon transplant	14	4	5	3	1	1
Tendon transplant without arthrodesis	3	1	1	1	0	0
	51	15	16	11	5	4

Most common transplants
Posterior tibial forward; extensor hallucis to first metatarsal; anterior tibial over

Rating of improvement in whole group:

Total	++++	+++	++	+	0	No Examination
51	14	11	15	2	5	4

In those in the "poor" group, the most common finding was a recurrence of the equinus. In many instances this arose incident to weakness of the muscles

of dorsiflexion. Often postoperative care was not carried through in satisfactory fashion and the result was greatly compromised.

Neurectomy—Gastrocnemius.—Neurectomy of the nerves to the gastrocnemius muscle by the Stöffel [3] technic was done in 19 instances only (table 3). In 2

Fig. 1.—*A*, a boy aged 4 years and 2 months showing equinus deformity prior to lengthening of the heel cord. *B*, same patient four years later; recurrence associated with flaccid paralysis of the muscle of dorsiflexion and poor postoperative care.

the nerve to the two heads of the gastrocnemius was divided; in all others the nerve to one head only was interrupted. In those in which the division of the nerve was done without other procedures the results were

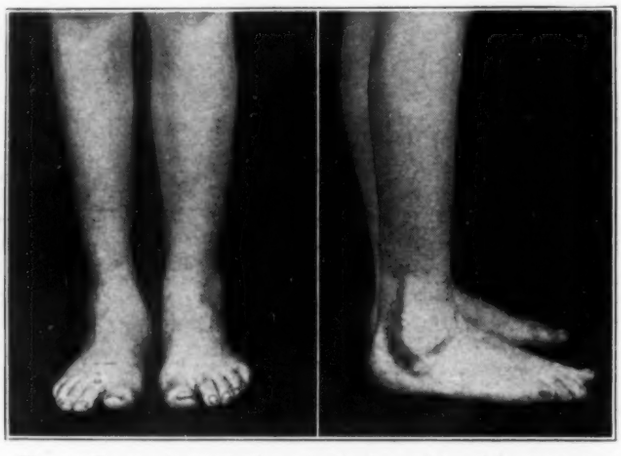


Fig. 2.—Same patient as in figure 1, showing position of feet at 9 years, fifteen months after triple arthrodesis on the right.

equally distributed among "excellent," "good," "fair" and "poor." The "excellent" results occurred in 2 cases in which the spasticity and deformity were mild. In those in which lengthening of the achilles tendon accompanied the division of the nerve, no results were better than "fair," and the 2 cases which were rated as "poor" showed a calcaneus deformity of significant degree.

Of other procedures affecting equinus, lengthening of the upper end of the gastrocnemius was done in 15 instances. In 4 of these neurectomy to one head of the gastrocnemius was an accompanying procedure. The result from this operation will be discussed later.

Arthrodesis-Tendon Transplantation. — The cases which presented arthrodesis of the foot and those in which tendons were transplanted in this area were grouped together, since tendon transplantation usually was accompanied by arthrodesis. The results of the various procedures were considered separately (table 4). There were only 3 cases in which tendon transplantation was done without an arthrodesis.

Forty-eight arthrodeses were done. The predominant procedure was a triple arthrodesis of the Hoke [4] type

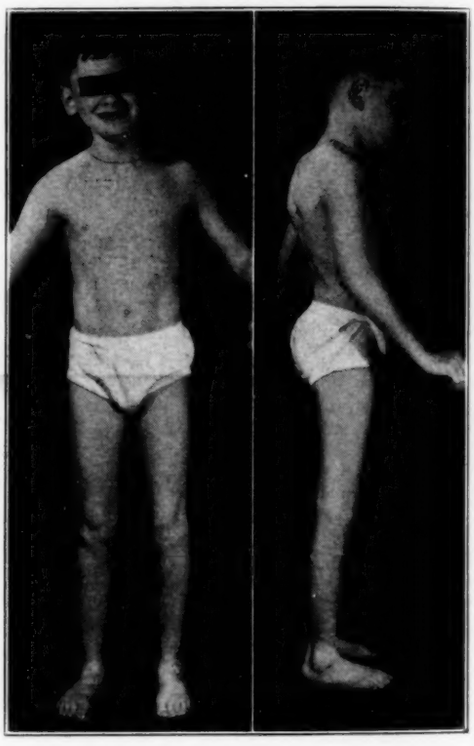


Fig. 4.—Boy aged 11 years unable to stand one year before. Status after bilateral adductor myotomy and obturator neurectomy, triple arthrodesis, lengthening of hamstrings and heads of the gastrocnemii. Walks alone. Significant decrease in accessory motions after operation.

or one of its variations. Seven countersinkings, as described by Brewster,[5] were in the series. In 14 cases the arthrodesis was accompanied by tendon transplantation.

Analysis reveals that this group, that is, arthrodesis with or without transplantation, showed by far the best results of the operations that were performed on the foot. Of the total of 51 operations, 31 were recorded as "good" or "excellent." Countersinking and arthrodesis with tendon transplantation were the two procedures which gave the best results. The tendon transplantation most commonly done was the posterior tibial into one of the metatarsals. In 1 instance it was necessary to transplant tendons into the os calcis to relieve calcaneus which had followed a tenotomy, not a lengthening, of the achilles tendon.

3. Stöffel, Adolf: The Treatment of Spastic Contractures, Am. J. Orthop. Surg. **10**: 4, 1913.

4. Hoke, Michael: An Operation for Stabilizing Paralytic Feet, J. Orthop. Surg. **3**: 494 (Oct.) 1921.

5. Brewster, A. H.: Countersinking of the Astragalus in Paralytic Feet, New England J. Med. **209**: 71 (July 13) 1933.

Operations on the Foot.—A comparison between the various summary groups of operations on the foot is not possible without a consideration of the various indications and the position of the procedures themselves in the total picture. Lengthening of the heel cord and neurectomy of the supply to the gastrocnemius can correct only the equinus—the former by lengthening the muscle and decreasing its arc of contraction, the latter by actually decreasing the muscle mass which has the ability to contract. Neither can directly stabilize the foot in a lateral direction, nor can the element of foot drop be corrected if the anterior muscles do not develop power after the deformity is relieved. Despite this, they have a definite place in the total program.

In our cases, neurectomy of the gastrocnemius has not been employed often and has been used in instances in which the deformity was not severe. It is our feeling that unless the deformity is mild and can be corrected easily under anesthesia, other procedures are preferable to neurectomy.

Lengthening of the heel cord is an excellent procedure in many instances, provided certain rules are observed. The heel cord should not be lengthened too much and

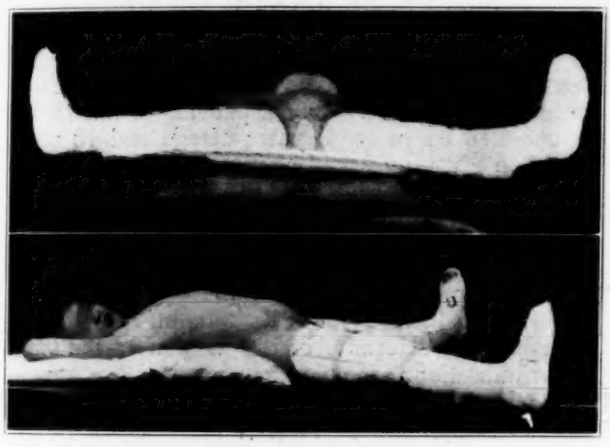


Fig. 7.—Hips held in abduction with bivalved plastic splint after adductor myotomy and obturator neurectomy.

must be as firmly sutured as any tendon transplant. The part should be immobilized at a right angle with the knee straight until firm healing has occurred. Following this, the foot should be maintained in the correct position, both by the use of night casts for a prolonged period and by exercises in dorsiflexion. Failure to do this was a common factor in the majority of our "poor" results. If the correction becomes stabilized, and if there is power in dorsiflexion, a "good" result may be expected. At any rate, it is a procedure which we do at an age when arthrodesis is contraindicated. It allows the progress of training and often solves the problem entirely. The fact that an arthrodesis may be necessary later does not indicate that lengthening of the heel cord has not had its place.

Arthrodesis is helpful in the older patient, either as a primary procedure or a secondary one, although it should rarely be done on children aged under 8 or 9 years. By attention to the pattern of arthrodesis the equinus as well as lateral deformity may be corrected. Foot drop and recurrent equinus may be obviated by a posterior block, which in our series has been accomplished by a countersinking or by correcting the foot with the astragalus in full plantar flexion. If controllable muscles are available, their transplantation has solved the problem of foot drop and recurrence of deformity in even better fashion. Arthrodesis of the midtarsal joints simplifies the control of the foot in a manner which cannot be accomplished in any other way.

DEFORMITIES OF THE KNEE

Operations about the knee in this series were designed to relieve flexion contracture. Hyperextension may be a feature of the gait in spastic paralysis, but unless it is a complication of an operative procedure it depends ordinarily on an equinus deformity of the foot with tight heel cords. Milder degrees of flexion contracture were not operated on in this series.

Fig. 8.—F. D., a girl aged 9 years and 9 months, with left hemiplegia, showing limitation of supination on the left side with inability to dorsiflex the hand.

The most frequent operation was lengthening of the hamstring tendons, which was carried out by one technic or another in 59 instances. In 11 the procedure was accompanied by division of the iliotibial band and intermuscular septum after the technic of Fitchet.[6] In the earlier cases of the series, tenotomy of the hamstrings rather than plastic lengthening was the rule. Thirty-five operations were done in this fashion (table 5). Lengthening of the hamstrings in a plastic manner was done in 24 instances.

Of the whole group, independent of method, the results in 11 cases were "excellent," 21 "good," 9 "fair" and 16 "poor" and in only 2 was an end result evaluation not possible.

Again the general motor status and the mentality of the patient were prominent factors in the end result. Of those rated "poor," 87 per cent were in patients with "motor status 1 or 2" and 63 per cent were in feebleminded patients.

In this series the procedure giving the best results in flexion deformity of the knee has been a combination of lengthening of the hamstrings with a lengthening of the tendinous origin of both heads of the gastrocnemius.[7]

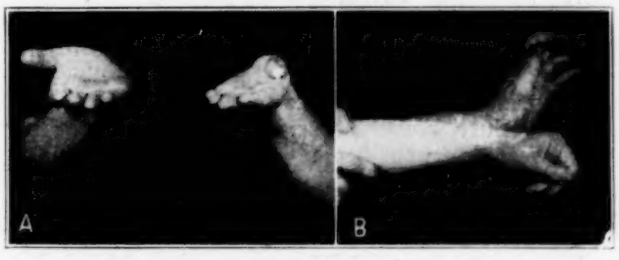


Fig. 9.—Same patient as in figure 8. *A*, range of active supination ten months after transplantation of the flexor carpi ulnaris to the extensor carpi radialis longus. *B*, phantom photography showing amount of active dorsiflexion possible at this time.

DEFORMITIES OF THE HIP

Of deformities involving the hip joint, adduction, with a resultant scissors gait, is in the majority of instances the most disabling. This adductor deformity may be accompanied by abductor weakness. Flexion

6. Fitchet, S. M.: Flexion Deformity of the Hip and the Lateral Intermuscular Septum, New England J. Med. **209**: 74 (July 13) 1933.
7. Green, W. T., to be published.

deformity of more or less degree is often seen, although its presence in severe degree is not common, unless the patient is older and has spent a considerable period without walking. Internal rotation is a frequent deformity, but ordinarily it is not severely disabling and may often be taken care of by training if the other deformities are corrected.

TABLE 5.—*Lengthening of Hamstring Tendons (Total Operations Fifty-Nine)*

Operation	Total	Result				
		Excellent	Good	Fair	Poor	No Examination
Lengthening of all hamstrings	9	0	7	0	2	0
Lengthening of all hamstrings plus both heads of gastrocnemius	15	7	6	0	2	0
Tenotomy of all hamstrings	30	4	8	6	10	2
Tenotomy of medial hamstrings	5	0	0	3	2	0
Total	59	11	21	9	16	2

In 11, iliotibial band and intermuscular septum (Fitchet) were divided

Rating of improvement in whole group:

Total	++++	+++	++	+	0	No Examination
59	20	13	8	4	10	4

Of those rated poor:
87% were in children in motor status 1 or 2
63% were in feebleminded children

Of those unimproved:
All were in children in motor status 1 or 2
60% were in feebleminded children

There were 77 operations performed for deformities of the hip. Adductor myotomy with obturator neurectomy by varying technics, which was done in 66 instances, was the most frequent operation (table 6). The procedure that was most used was neurectomy of the anterior branch of the obturator nerve accompanied by myotomy of the adductor longus and brevis and of a few fibers of the magnus. In only 2 instances was it described that both anterior and posterior branches of the obturator nerve were divided. Results from the operations for adduction deformity were disappointing and were contrary to our impression. Twenty-three of the 66 operations were recorded as a "poor" result, 20 as "fair," 11 as "good" and only 4 as "excellent." No examination was done on 8. Twelve were unimproved.

Sixty-one per cent of those in the "poor" group were in "motor status 1," but only 22 per cent were feebleminded children. The reason for the "poor" result in all instances was recurrence of the deformity.

In an evaluation of the causes of the recurrence, three factors were determined to be in large part responsible:

1. The patient was not held long enough in the abducted position after operation.
2. Physical therapeutic measures were neglected.
3. The procedure was not extensive enough.

It is our feeling that in the adductor operations, as in all others, the parts must be retained for a considerable period in the corrected position at least part time. In practice this is accomplished mainly by the use of night casts, and it is our custom at this time to retain the parts in abduction, using two bivalved cylinders which are held apart by struts, in the fashion illustrated in figure 7. This is more comfortable than a spica.

It may be necessary to use this for many months in order to stabilize the position. Frequently there is weakness of the abductors. Maintaining the corrected position and giving exercises in abduction allow this to be counteracted.

Of procedures carried out at the hip to relieve flexion contracture, fasciotomy after the manner of Ober [8] was done in 3 cases; the Soutter [9] operation was done once. All gave improvement. In 2 instances the origin of the tensor fascia femoris was transplanted backward on the ilium after the manner of Legg [10] for internal rotation deformity and to give increased power of abduction. Both purposes were served in these 2 operations. Partial division of the gluteus medius and minimus after the manner of Durham [11] was done once in this series and resulted in improvement. Any procedure that weakens abductor power should be avoided.

As a total expression of the operative result in the lower extremities, an analysis was made of the group of patients who were unable to walk on admission. Thirty-one of the 160 patients were unable to walk prior to operation. Six of these were still unable to walk after the operation; 11 walked with assistance, that is with braces and crutches in combination or separately, and 9 were able to walk alone. On 5 there was no record. Of the 12 patients who walked with support before operation, 5 were able to walk alone, 4 still needed assistance and 1 was unable to walk. The latter had a progressive degenerative disease.

The average age at the time of operation of those not walking was 6½ years. Only 2 patients in this group were operated on before 3 years of age and 16 were operated on after 5 years of age.

All patients who were unable to walk postoperatively were quadriplegic.

THE UPPER EXTREMITY

The number of operations in the upper extremity was relatively small, 42 out of the total of 421. Pronation and flexion deformity of the wrist were the most frequent indications for operations.

TABLE 8.—*Operation on Forearm (Total Operations Twenty-Eight)*

Operation	Total	Result				
		Excellent	Good	Fair	Poor	No Examination
Neurectomy—pronator teres (Stöffel)	19	4	1	4	4	6
Tendon transplant, flexor carpi ulnaris to extensor carpi radialis longus	9	6	2	1	0	0

Rating of Improvement

	Total	++++	+++	++	+	0	No Examination
Stöffel—pronator....	19	2	3	3	3	2	6
Ulnaris transplant...	9	6	2	1	0	0	0

Three patients with a Stöffel operation after which little improvement was shown were definitely improved following ulnaris transplant

For pronation deformity, neurectomy of the branch of median nerve to the pronator teres was done in 19 instances. Of these, 4 were rated as "excellent," 1 as "good," 4 as "fair" and 4 as "poor," with final evaluation not being made in 8 (table 8). This procedure relieves

8. Ober, F. R.: Back Strain and Sciatica, J. A. M. A. **104**: 1580 (May 4) 1935.
9. Soutter, Robert: A New Operation for Hip Contractures in Poliomyelitis, Boston M. & S. J. **170**: 380, 1914.
10. Legg, A. T.: Transplantation of Tensor Fasciae Femoris in Cases of Weakened Gluteus Medius, New England J. Med. **209**: 61 (July 13) 1933.
11. Durham, H. A.: A Procedure for the Correction of Internal Rotation of the Thigh in Spastic Paralysis, J. Bone & Joint Surg. **20**: 339 (April) 1938.

the spasticity of the pronator teres and allows the patient to develop better supination. With removal of this difficulty in control, general function of the wrist and hand may improve.

Pronation and flexion deformity of the wrist are often associated with weakness of the extensors of the wrist as well as with spasticity and contracture of the flexor carpi ulnaris. In such instances tendon transplantation of the flexor carpi ulnaris to the extensor carpi radialis longus tendon may be done in such a manner as to promote both extension of the wrist and supination.[7]

We have been pleased with the results of this procedure and it has been much more satisfactory than neurectomy to the pronator teres. In 6 of the 9 operations done, the result is classified as "excellent," in 2 "good" and in 1 "fair." All patients showed improvement.

Transplantation of the flexor ulnaris tendon removes it as a deforming factor, both in flexion and in ulnar deviation, and allows it to assist in active dorsiflexion and supination.

Operations in the upper arm in our series were rare indeed. Four operations were done. One of these was a tenotomy of the insertion of the latissimus dorsi and teres major; 3 were neurectomies to major muscles. In all instances the neurectomies were only partial, that is the total innervation of the individual muscles was not divided. All those procedures resulted in improvement, as may be seen in table 9.

SUMMARY

1. A study has been made of the results of 421 orthopedic operations on 160 patients with spastic paralysis which have been done during the past fifteen years. In 88 per cent an end result classification has been made. "Spasticity," independent of its origin, has been the criterion by which cases were included in the group.

2. The patients operated on in this series were delimited by the attitude that:

(*a*) Surgical procedures are an adjunct in the general plan of therapy for spastic paralysis.

(*b*) Orthopedic operations on patients with cerebral palsy of the extrapyramidal type are not often helpful.

(*c*) Operations are indicated in only a certain proportion of spastic paralysis, depending on the nature of the deformity and the general status of the patient.

3. Two hundred and twenty-eight of the operations were done for deformities of the feet. Lengthening of the heel cords, arthrodesis and neurectomy affecting the gastrocnemius were done in that order of frequency. Arthrodesis gave the best results, although comparisons are not valid. Lengthening of the heel cord is a good procedure provided certain principles are followed. Tendon transplantation is helpful in deformities of the foot.

4. Lengthening of the hamstring tendons was the most common operation at the knee. The results were better in those instances in which it was accompanied by lengthening of the upper end of the gastrocnemius.

5. The results from obturator neurectomy with adductor myotomy were disappointing, although all but 12 of the 66 resulted in improvement.

6. Division of the branch of the median nerve to the pronator teres was helpful in correcting pronation deformity.

7. Transplant of the flexor carpi ulnaris to the extensor carpi radialis longus was an excellent procedure for flexion deformity of the wrist as well as pronation deformity. It has been found to be more useful than neurectomy of the pronator teres.

8. The operative results in those patients with quadriplegia were not as good as in the other groups. All patients who could not walk after being operated on were quadriplegic.

9. Certain general comments may be made regarding those operations in which the result was "poor":

(*a*) The majority of the "poor" results were in those who were feebleminded or were in "motor status 1 or 2." In many the posibility of a "poor" result was considered prior to operation, but it was felt that an attempt should be made to give improvement. Certainly any error should be made in this direction rather than the other.

(*b*) The choice of procedure could be criticized in certain instances. Inattention to weakness in antagonistic muscles was a common mistake.

(*c*) Inadequate postoperative care and training were large factors in the "poor" group, in which the result should have been better. In this series, too brief immobilization in the corrected position was interpreted as the most frequent error in the postoperative regimen. We believe that intermittent support in the ideal position is desirable until the correction is stabilized, whether it requires months or years. The use of corrective casts at night should be a fundamental part of the routine.

The physical therapy during this period should emphasize, in addition to muscle training of the type usually prescribed in cerebral palsy, exercises to those specific muscles which oppose the deformity. Braces should be used if they are indicated, either as a temporary feature in establishing function or as a permanent measure if necessary.

ABSTRACT OF DISCUSSION

DR. BEVERIDGE H. MOORE, Chicago: This end result study has been excellently done. I have felt that these patients either improve a lot about the time of adolescence or they get a lot worse. The operations that my associates and I have used for these patients have been about the same as those of Drs. Green and McDermott. We do not do many tendon transplants in the muscles of the foot because in our hands they have not been very satisfactory. We prefer the arthrodesing operations; but one cannot do these until the patient has reached a certain stage of development in bone structure. During that interval we also do tendon lengthening, but we have been doing neurectomies of late and have thought that we were getting better results with them. We do them only as a matter of relaxing the muscles and do not use them if there is a structural shortening of the heel cord. The authors only accidentally mentioned one operation that we have found satisfactory and that is Durham's rotator section. We have seen a lot of improvement in the gait from the use of this simple operation. As for results in feebleminded children, it has been and still is an open question in my mind whether it is worth while to operate on them; it is reasonably certain that we are not going to get a fair result.

DR. MANUEL E. PUSITZ, Topeka, Kan.: Surgery is but an incident in the treatment of cerebral palsy. Many failures can be traced to relying on surgical intervention and not on adequate follow-up. I was gratified to hear the authors stress postoperative splinting in these cases. One of the striking reasons for the reduplication of the operation is this lack of postoperative or, rather, postfixation support. I do not believe that the bad results are all in quadriplegias. Hemiplegias are more difficult to treat and offer the most difficult type of reconstructive problem. Surgery is merely a means to enable the physical therapist to apply his methods to train the patient. The object of tendon lengthening is to have the foot at a right angle so that the period of muscle training can begin early. I do not think that has been stressed enough. One must try as much as possible to simulate the normal tendency to learn to

walk at 2 and to speak at 5. By the time the child is 8 or 10 he has acquired a number of mental behavior patterns as well as motor defective mechanisms, which are very difficult to eradicate. A tendon lengthening in some of our cases is done as early as at 2 or 3, provided the patient does show evidence of a good mental status, and following the tendon lengthening a brace is applied for a prolonged period so that the physical educationalist can start in with those feet at right angles. The period of bracing may have to continue until such time as an arthrodesis operation may have to be performed, and, if the dorsal flexors by that time have not been developed, through some means these muscles can be made to act, and that forms part of our program in the muscle reeducation system. I have been amazed at the number of cases that show poor dorsal flexion action but if properly protected and properly braced will show a return of this motor power. If it does not then we do a triple arthrodesis; but the whole procedure is done as soon as possible to start the muscle education program, and surgical intenvention is merely a step to that program.

DR. WILLIAM T. GREEN, Boston: I would agree heartily with Dr. Moore's comment that feeblemindedness is a contraindication to operation provided he limits the statement to operations on the upper extremity. It seems to us that this does not apply to the lower extremity. If a patient who is unable to walk can be made to do so by an operation, it should be done despite the presence of feeblemindedness. The ability to walk greatly simplifies the care of the patient even though he is dependent in other ways.

A CLINICAL ANALYSIS OF FIFTEEN THOUSAND CASES OF PNEUMONIA

AN EVALUATION OF THE EFFECTIVENESS OF VARIOUS THERAPEUTIC AGENTS

D. C. STAHLE, M.D.

Director, Division of Pneumonia Control, Commonwealth of Pennsylvania Department of Health

HARRISBURG, PA.

Pneumonia has for at least thirty centuries defied medical science to control its ravages in the human race and year after year continues to be a leading cause of death. Unfortunately, no satisfactory methods of prevention have been proposed. Isolation of infected patients and carriers and proper care of the common cold would help somewhat but gives little hope of any outstanding success. Prophylactic immunization recently has shown promise in preventing the disease or at least in modifying its severity if it is contracted. This procedure, however, is not yet practicable for general use. There must be a temporary resignation to the fact that annually one half million residents of the United States suffer from pneumonia. However, a great deal can be done about the 100,000 deaths resulting annually from this curable disease.

Recent advances in therapy have placed at the disposal of every physician facilities for treating his pneumonia patient. With their proper use the case fatality rate will fall from approximately 30 per cent [1] (the generally accepted figure in untreated pneumonia) to 10 per cent or less, the figure that can be achieved with the use of well directed specific treatment. Adequate therapy, therefore, if given to all patients with pneumonia, will decrease the annual pneumonia deaths in the United States from 100,000 to 35,000, a saving of 65,000 lives.

The introduction of chemotherapy has made this possible, for there is now a specific therapeutic agent which is readily available and inexpensive and can be safely used by every physician on every susceptible pneumonia patient. Uniformly good results are assured.

A pneumonia control study was begun in 1937 in Pennsylvania as a cooperative endeavor of the state department of health and the state medical society. Laboratory facilities as well as specific therapeutic serum in certain types were made available to the private physician for use in treating indigent patients with pneumonia. From a modest beginning for the year from July 1, 1937 to June 30, 1938, when only 1,200 patients were treated, the program has expanded to include 9,000 patients given specific therapy for the same period in 1939-1940 and 10,000 for the nine months following July 1, 1940, with a steady decrease in the case fatality rate in the treated series. In the short space of three years 9,000 more patients have been brought under specific therapy, and therefore, transferred from the 30 per cent to the 10 per cent case fatality rate. This was accomplished by an extension of our program and the introduction of chemotherapy. The effects on the disease are reflected in the total state mortality figures, which for the years beginning July 1, 1937 were 7,117, 5,869 and 5,003,[2] and 160 fewer deaths were recorded in the first eight months (later statistics not yet available) of 1940-1941 than for the same period for the previous year.

When compared to 8,600 annual deaths from pneumonia in Pennsylvania, representing the average for the decade 1929-1938, and an all time low of 7,355 deaths in 1933, these figures would appear significant.

Careful records have been kept during the study, and my purpose in this paper is to present an evaluation of the various therapeutic agents used.

SOURCE OF MATERIAL AND ANALYSIS OF CASES

The series of cases comprising this study includes only those in which treatment was given in the interval between July 1, 1939 and April 1, 1941. In every case the clinical diagnosis was pneumonia, confirmed in 64.6 per cent of the series by roentgenograms or by recovery of a type specific pneumococcus from either the sputum or the blood. The case fatality rate in this group was 8.95 per cent. In the remainder of the series (5,341 cases), henceforth referred to as unspecified, there was no specific laboratory confirmation of the diagnosis; this group consisted of cases in which (1) more than one specific type pneumococcus was found; (2) pneumococci were found but could not be typed; (3) no pneumococci were found but other organisms, such as staphylococci, streptococci and Klebsiella pneumoniae, were present, and (4) no attempt was made to recover a causative organism. A case fatality rate of 9.64 per cent testifies to the severity of the illness in the group. Its inclusion adversely affects the series.

The cases presented are representative of pneumonia as it occurs in the general population in the low income levels. The series comprises cases of primary, secondary, postoperative, complicated and uncomplicated pneumonia and includes cases involving home treatment (representing 24.3 per cent of the series) and hospital

---

Mr. E. Douglas Burdick, assistant professor of statistics at the University of Pennsylvania, checked the statistical methods used in this paper.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

This study was made by the Commonwealth of Pennsylvania Department of Health under Dr. John J. Shaw, secretary of health, in cooperation with the Pennsylvania State Medical Society.

1. Heffron, Roderick: Pneumonia with Special Reference to Pneumococcus Lobar Pneumonia, New York, Commonwealth Fund, 1939, p. 657.

2. Tentative figures: official statistics are not yet available.

treatment (representing 75.7 per cent). All age groups are included and for convenience of analysis have been divided as follows:

Under 2 years of age, 12.8 per cent of the series; 2 to 12, 15.8 per cent; 13 to 60, 52.3 per cent; over 60, 14.7 per cent, and age not stated, 4.3 per cent.

TABLE 1.—*Mortality Rates from Pneumonia (July 1, 1939 to April 1, 1941)*

Therapy	Number of Cases	Deaths	Case Fatality Rate, per Cent
Specific serum	181	27	14.92
Sulfapyridine	9,195	745	8.10
Sulfathiazole	3,686	304	8.29
Sulfadiazine	52	6	11.54
Serum and sulfapyridine	1,456	183	12.57
Serum and sulfathiazole	331	68	20.54
No specific therapy	370	69	18.65
Total	15,251	1,402	9.19

Obviously, any attempt to regiment cases in so large a series embracing such a widely scattered area was impossible. An evaluation of the merits of sulfathiazole versus sulfapyridine and of the drug (either of these agents) versus the drug plus serum, therefore, will necessitate a careful analysis of the many factors which of themselves, independently of the therapy applied, affect the prognosis. These factors are (1) the type of pneumococcus acting as the causative agent, (2) the age of the patient, (3) the incidence of bacteremia, (4) the incidence of concurrent diseases (heart disease, cancer and conditions requiring surgical intervention), (5) the incidence of complications (empyema, meningitis and others) and (6) the interval between the onset of the disease and the beginning of therapy. Considered in the light of these various factors, certain deductions as to the effectiveness of these various agents in reducing the mortality from pneumonia should be possible.

It must be assumed that the group receiving combined therapy was a less favorable one than the group for which chemotherapy alone was used. In the past certain conditions—advanced age, bacteremia and the presence of preexisting systemic disease—have been used as indications for combined therapy, and if a larger percentage of patients receiving combined therapy have these conditions the case fatality rates for the group will be higher. Careful consideration must therefore be given these factors in evaluation. It is my purpose to learn whether patients coming under this adverse heading show better results with serum in addition to the drug and whether the presence of any of these factors is an indication for combined therapy.

An average dose of 123,000 units of serum per patient was given to patients who recovered and 155,000 units per patient to those who died.

RESULTS OF THERAPY

Gross Mortality (table 1).—That all therapeutic agents used in the study are effective in reducing anticipated deaths from pneumonia is apparent from the total case fatality rate of 9.19 per cent. The results for sulfapyridine and sulfathiazole, as others have found,[3] are similar, and the difference is of no statistical significance. Of great interest are the fatality rates in the group treated with both a drug and serum. As has been the experience of others,[4] the case fatality rate is higher in this group than in the group given chemotherapy alone. Undoubtedly the patients given combined therapy were more severely ill. A careful analysis of this series should reveal the reason and also establish indications for the use of combined therapy versus chemotherapy alone.

EFFECTS OF TYPE INCIDENCE ON CASE FATALITY RATES

That the severity of pneumonia varies from year to year is a generally accepted fact. Of great importance in this regard is the type distribution.

Table 2 shows the type incidence and the fatality rates among 6,043 specifically typed cases.

Types I, III and II, in the order given, were most frequent, accounting for 50.2 per cent of the series. Types VII, VIII and IV made up an additional 20 per cent, a total of 70.2 per cent of the total typed cases. The remainder or so-called "higher types" comprised 29.8 per cent. These results compare favorably with previous reports[5] and indicate from type incidence alone that pneumococcic pneumonia occurring during the period of the study was of the usual variety and severity.

TABLE 2.—*Type Incidence of Pneumonia in Pennsylvania*

Type	Number of Cases	Percentage of Total	Number of Deaths	Mortality, per Cent
I	1,271	21.03	91	7.16
II	816	13.50	56	6.86
III	944	15.62	154	16.31
IV	266	4.35	22	7.36
V	232	3.84	19	8.19
VI	187	3.10	19	10.24
VII	464	7.68	27	5.82
VIII	445	7.36	25	5.62
IX	74	1.22	9	12.16
X	45	0.74	3	6.67
XI	47	0.78	9	19.15
XII	63	1.04	8	12.70
XIII	59	0.98	5	8.47
XIV	173	2.86	13	7.51
XV	56	0.93	2	3.64
XVI	54	0.89	3	5.56
XVII	60	0.99	6	10.00
XVIII	96	1.59	11	11.46
XIX	138	2.28	11	7.97
XX	85	1.41	7	8.24
XXI	32	0.53	2	6.25
XXII	55	0.91	6	10.91
XXIII	60	0.99	8	13.33
XXIV	51	0.84	4	7.84
XXV	47	0.78	4	8.51
XXVII	47	0.78	1	2.13
XXVIII	25	0.41	2	8.00
XXIX	56	0.93	4	7.14
XXXI	26	0.43	4	15.38
XXXII	19	0.31	3	15.79
XXXIII	17	0.28	3	17.65
	6,043	100.00	541	8.95

It is apparent that certain types of pneumococci are associated with a higher case fatality rate than others, patients with type III pneumococcic pneumonia, for

3. Flippin, Harrison F.; Reinhold, John G., and Schwartz, Leon: Sulfapyridine and Sulfathiazole Therapy in Pneumococcic Pneumonia, J. A. M. A. **116:** 683-689 (Feb. 22) 1941. Long, Perrin H., and Haviland, James W.: The Problem of Pneumonia with Reference to Chemo- and Sero-Therapy, Ann. Int. Med. **14:** 1042 (Dec.) 1940. Finland, Maxwell; Lowell, Francis C., and Strauss, Elias: Treatment of Pneumococcic Pneumonias with Sulfapyridine, Sulfathiazole and Serum, ibid. **14:** 1184 (Jan.) 1941.

4. Finland, Maxwell; Spring, William C., Jr., and Lowell, Francis C.: Specific Treatment of the Pneumococcic Pneumonias: An Analysis of the Results of Serum Therapy and Chemotherapy at the Boston City Hospital from July 1938 Through June 1939, Ann. Int. Med. **13:** 1567 (March) 1940. Bullowa, J. G. M.; Osgood, Edwin E.; Bukantz, Samuel C., and Brownlee, Inez E.: The Effect of Sulfapyridine Alone and with Serum on Pneumococcic Pneumonia and on Pneumococcus-Infested Marrow Cultures, Am. J. M. Sc. **199:** 364-380 (March) 1940. Finland, Lowell and Strauss.[3]

5. Heffron: Pneumonia, p. 43. Reiman, H. A.: The Pneumonias, Philadelphia and London, W. B. Saunders Company, 1938, p. 29.

example, showing a rate of 16.3 per cent as compared to 7.2 per cent for those with type I. Obviously, therefore, any series having a predominance of cases due to an organism responsible for a high fatality rate would suffer accordingly.

From table 3 it may be seen that the distribution by type and unspecified cases is comparable for sulfapyridine and sulfathiazole. As would be expected, the types for which serum has been used in the past and has proved efficacious predominate in the combined series.

rate of 28.1 per cent for type I lobar pneumonia in adults, 36.6 per cent for type II and 46 per cent for type III, shows that all the agents used in this series are effective in reducing deaths from pneumonia.

INTERVAL BETWEEN ONSET OF DISEASE AND BEGINNING OF THERAPY

Patients with pneumonia treated early in the disease have a much better chance to survive. Table 4 demonstrates the advantages of early therapy; a case fatality rate of 7.59 per cent was obtained when treatment was

TABLE 3.—*Pneumonia Mortality by Selected Types*

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Serum				Sulfathiazole and Serum				Serum			
	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate
Totals	9,195	.....	745	8.10	3,096	.....	304	8.29	1,456	.....	183	12.57	331	.....	68	20.54	181	.....	27	14.92
Types																				
I	309	17.59	27	5.30	161	15.15	4	2.48	445	31.16	41	9.21	80	24.54	9	11.25	60	33.90	7	11.67
II	300	12.44	18	5.00	105	9.88	3	2.86	251	17.58	18	7.17	46	14.11	6	13.04	42	27.73	8	19.05
III	435	15.04	49	11.26	174	16.37	17	9.77	231	16.18	50	21.65	66	20.24	28	42.42	15	8.47	4	26.67
V, VII, VIII and XIV	631	21.81	31	4.91	245	23.05	7	2.86	289	20.24	28	9.69	65	19.94	11	16.92	38	21.47	2	5.26
Other types	958	33.11	67	6.99	378	35.55	28	7.41	212	14.84	36	16.98	69	21.17	13	18.84	22	12.43	4	18.18
Unspecified	6,302	.....	553	8.77	2,633	.....	245	9.41	28	.....	10	35.71	5	.....	1	20.00	4	.....	2	50.00

	Chemotherapy				Combined Therapy				Sulfadiazine				Other Therapy				Totals			
Totals	12,801	.....	1,049	8.16	1,787	.....	251	14.05	52	....	6	11.54	370	....	69	18.65	15,251	.....	1,402	9.19
Types																				
I	670	16.94	31	4.63	325	20.93	50	9.52	3	7.69	0	.....	13	11.11	3	23.08	1,271	21.03	91	7.16
II	465	11.75	21	4.52	297	16.93	24	8.08	3	7.69	0	.....	9	7.69	3	33.33	816	13.50	56	6.86
III	689	15.39	66	10.84	297	16.93	78	26.26	2	5.13	1	50.00	21	17.95	5	23.81	944	15.62	154	16.21
V, VII, VIII and XIV	876	22.14	38	4.34	354	20.18	39	11.02	16	41.03	1	6.25	30	25.64	4	13.33	1,314	21.75	84	6.39
Other types	1,336	33.77	95	7.11	281	16.02	49	17.44	15	38.46	3	20.00	44	37.61	5	11.36	1,698	28.10	156	9.19
Unspecified	8,975	.....	798	8.96	33	.....	11*	33.33	13	.....	1	7.69	253	.....	49	19.37	9,208	.....	861	9.35

* Includes cases in which more than one pneumococcus was isolated from the sputum.

TABLE 4.—*Mortality by Treatment—First Four Days and After Four Days* *

	Sulfapyridine			Sulfathiazole			Totals for Sulfapyridine and Sulfathiazole				Totals of All Cases		
	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	% of Cases in Each Interval Group	Cases	Deaths	Case Fatality Rate
First 4 days	5,196	341	6.56	2,583	187	7.24	7,779	528	6.79	82.23			
After 4 days	1,122	159	14.17	559	64	11.45	1,681	223	13.27	17.77			

	Sulfapyridine and Serum			Sulfathiazole and Serum			Totals for Sulfapyridine and Serum and Sulfathiazole and Serum						
First 4 days	974	112	11.50	235	42	17.87	1,209	154	12.74	84.96	8,988	682	7.59
After 4 days	152	37	24.34	62	20	32.26	214	57	26.64	15.04	1,895	280	14.78
											10,883	962	8.84

* Only those cases in which accurate information was available in the groups discussed were included in this table.

If only typed cases are considered, the case fatality rate for patients given chemotherapy alone becomes 6.3 per cent as compared with 13.7 per cent for those given combined therapy. The preponderance of unspecified cases is disadvantageous to the former group. Interestingly, they are higher in each instance in the combined series. It is obvious that type alone is not the factor responsible for the higher rates. All other conditions being equal, there is no type of pneumonia for which serum should be given routinely in addition to a sulfonamide.

Comparison of the results in the present series with results tabulated by Heffron,[6] in which there was a

6. Heffron: Pneumonia, pp. 664-667, 670.

begun within the first four days of the disease, as compared to 14.97 per cent, the case fatality rate after the fourth day.

The same ratio holds for the group that was given chemotherapy alone and the group given combined therapy.

Predominance of patients treated after the fourth day would give adverse results in any given series. The slight difference in the percentage of patients treated within four days is advantageous to the combined therapy group (84.96 per cent compared with 82.22 per cent for the chemotherapy group). This factor is certainly not responsible for the higher case fatality rate in the combined therapy group.

EFFECT OF CONCURRENT DISEASES ON CASE FATALITY RATE

Any patient who has a serious illness in addition to pneumonia is at a definite disadvantage, and his chances of survival are appreciably less regardless of the therapeutic agent used.

In 25.38 per cent of the cases listed in table 5 there was at least one other condition coexistent with pneumonia.[7] The case fatality rate was 18.88 per cent, more than twice the rate in the overall series.

It is important to know what proportion of this series has been allocated to each type of therapy. The results again for sulfathiazole and sulfapyridine are comparable with an almost identical fatality rate in cases so complicated, 17.14 per cent as compared with 17.30 per cent. Only a slightly higher percentage of cases in the combined therapy group were complicated, 27.14 per cent as compared with 24.93 per cent. For the age groups 13 to 60 and over 60, the results were similar for the two series, slightly advantageous to the combined therapy group.

Case fatality rates again are lower in the chemotherapy group. It is apparent, therefore, that concurrent disease is not the factor responsible for the higher death rate in the combined therapy group and is not alone an indication for the use of combined therapy.

Of the deaths in the entire series, 52.01 per cent occurred in the group of patients having an associated illness in addition to pneumonia.

POSTPNEUMONIC COMPLICATIONS

The incidence of complications in the series was low and comparable for the sulfathiazole and the sulfapyridine treated patients and fairly so for the chemotherapy versus the combined therapy group. The former shows one or more complications in 9.31 per cent of the series; the latter shows 11.8 per cent. This slight difference can be anticipated on the basis of a

7. Concurrent diseases included pregnancy, puerperium, surgical intervention, heart disease, tuberculosis, diabetes, cancer and alcoholism.

TABLE 5.—*Concurrent Diseases by Age Group and Treatment* *

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Sulfathiazole				Totals †			
	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate
Totals	2,220	24.14	384	17.30	986	26.90	169	17.14	3,206	24.93	553	17.25				
Under 2	113	8.70	23	20.35	71	12.26	18	25.35	184	9.80	41	22.28				
2 to 12	157	9.22	9	5.73	61	10.63	2	3.28	218	9.58	11	5.05				
13 to 60	1,298	28.48	185	14.25	522	29.59	59	11.30	1,820	28.79	244	13.41				
Over 60	562	44.75	160	28.47	287	48.80	87	30.31	849	46.07	247	29.09				
Unspecified	90	23.62	7	7.78	45	27.78	3	6.67	135	24.86	10	7.41				
	Sulfapyridine and Serum				Sulfathiazole and Serum				Sulfapyridine and Serum and Sulfathiazole and Serum							
Totals	392	26.92	88	22.45	93	28.10	40	43.01	485	27.14	128	26.39	3,871	25.38	731	18.88
Under 2	2	8.70	0	.....	0	.....	0	.....	2	7.14	0	.....	192	9.82	42	21.88
2 to 12	8	14.29	0	.....	1	9.09	0	.....	9	13.43	0	.....	237	9.82	13	5.49
13 to 60	253	23.67	42	16.60	60	24.79	20	33.33	313	23.87	62	19.81	2,237	28.04	327	14.62
Over 60	115	47.13	42	36.52	31	51.67	20	64.51	146	48.03	62	42.47	1,045	46.50	332	31.77
Unspecified	14	21.88	4	28.57	1	7.69	0	.....	15	19.48	4	26.67	160	24.17	17	10.62

* Severity of disease within this group is apparently comparable for all series.
† Totals include cases in which other therapy than that specified in table was used.

TABLE 6.—*Pneumonia Mortality by Age Groups*

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Serum				Totals *			
	Cases	Deaths	Case Fatality Rate	Percentage of Total Fatality by Age Group	Cases	Deaths	Case Fatality Rate	Percentage of Total Fatality by Age Group	Cases	Deaths	Case Fatality Rate	Percentage of Total Fatality by Age Group	Cases	Deaths	Case Fatality Rate	Percentage of Total Fatality by Age Group
Totals	9,195	745	8.10	.....	3,666	304	8.29	.....	1,456	183	12.57	.....				
Age group																
Under 2	1,299	107	8.24	14.13	579	52	8.98	15.79	23	7	30.43	1.58				
2 to 12	1,702	27	1.59	18.51	574	6	1.05	15.66	56	1	1.79	3.85				
13 to 60	4,557	322	7.07	49.56	1,764	109	6.18	48.12	1,069	106	9.92	73.42				
Over 60	1,256	275	21.89	13.66	587	133	22.66	16.01	244	64	26.23	16.69				
Unspecified	381	14	3.67	4.14	162	4	2.47	4.42	64	5	7.81	4.40				
	Sulfathiazole and Serum				Chemotherapy				Combined Therapy							
Totals	331	68	20.54	.....	12,861	1,049	8.16	.....	1,787	251	14.05	.....	15,251	1,402	9.19	.....
Age group																
Under 2	5	1	20.00	1.51	1,878	159	8.47	14.00	28	8	28.57	1.57	1,955	181	9.26	12.82
2 to 12	11	1	9.09	3.32	2,276	33	1.45	17.70	67	2	2.99	3.75	2,414	37	1.53	15.83
13 to 60	242	35	14.46	73.11	6,321	431	6.82	49.15	1,311	141	10.76	73.36	7,977	617	7.73	52.30
Over 60	69	31	51.67	18.13	1,843	408	22.14	14.33	304	95	31.25	17.01	2,243	538	23.99	14.71
Unspecified	13	0	.....	3.93	543	18	3.31	4.22	77	5	6.49	4.31	662	29	4.38	4.34

* Totals include cases in which serum alone, sulfadiazine and other therapy was used.

generally more severely ill group of patients in the combined therapy group, with probably a higher bacteremic incidence, which, as shown by Tilghman and Finland,[8] definitely increased the expected complications.

The case fatality rate for those of the series showing a complication was 12.4 per cent if otitis media was included and 16.4 per cent if otitis media was excluded.

The case fatality rates were as high as or higher than 16.4 per cent in the combined therapy group for each complication except empyema.

Of especial interest are 82 cases of pneumococcic meningitis (not all secondary to pneumonia) with 67 deaths and a case fatality rate of 81.7 per cent. In spite of new developments in treatment, the fatality rate in this condition in our series was extremely high. Patients treated with the drug alone have fared as well as those in whom serum was used in addition.

2 years of age: 14.60 per cent as compared with 1.57 per cent for the combined therapy group; the latter, on the other hand, has a slightly higher percentage of patients over 60 (17.01 per cent as against 14.33 per cent for the drug alone group). The drug alone group gains a considerable advantage in having 17.7 per cent of the patients in the age group 2 to 12; whereas the combined therapy group has only 3.75 per cent in this age group. This advantage is offset somewhat by a predominance of cases in the favorable age group 13 to 60 years in the combined therapy group, 73.36 per cent as compared with 49.15 per cent.

Undoubtedly, the age distribution is somewhat unfavorable to the combined therapy group and is a factor in accounting for the higher case fatality rate in this group. It is interesting, however, that age group for age group the case fatality rates are lower in the

TABLE 7.—*Comparative Effects of Chemotherapy Alone and Combined with Serum: Bacteremic Pneumonia*

Chemotherapy	Total Cases	Total Deaths	Case Fatality Rate	Age Groups: Under 2 Cases	Under 2 Deaths	Under 2 Case Fatality Rate	Under 2 Percentage of Total Groups	2 to 12 Cases	2 to 12 Deaths	2 to 12 Case Fatality Rate	2 to 12 Percentage of Total Groups	13 to 60 Cases	13 to 60 Deaths	13 to 60 Case Fatality Rate	13 to 60 Percentage of Total Groups	Over 60 Cases	Over 60 Deaths	Over 60 Case Fatality Rate	Over 60 Percentage of Total Groups	Unknown Cases	Unknown Deaths	Unknown Case Fatality Rate	Unknown Percentage of Total Groups	Incidence of Complications Cases	Incidence of Complications Percentage of Total Groups	Incidence of Accompanying Conditions Cases	Incidence of Accompanying Conditions Percentage of Total Groups
Totals	188	51	27.13	4	1	25.00	2.13	9	0	0	4.79	134	38	28.36	71.28	31	11	35.48	16.48	10	1	10.00	5.32	33	17.55	66	35.11
Type																											
Type I	37	6	16.22	.....	.....	.....	.....	3	0	0	8.11	28	4	14.29	75.68	5	2	40.00	13.51	1	0	.....	2.70	6	16.22	13	35.14
Type II	16	1	6.25	.....	.....	.....	.....	1	0	0	6.25	12	1	8.33	75.00	1	0	.....	6.25	2	0	.....	12.50	.....	.....	3	18.75
Type III	26	12	46.15	.....	.....	.....	.....	0	0	0	.....	16	9	56.25	61.54	8	3	37.50	30.77	2	0	.....	7.69	1	3.85	10	38.46
Types V, VII, VIII and XIV	40	10	25.00	.....	.....	.....	.....	1	0	0	2.50	28	7	25.00	70.00	9	3	33.33	22.50	2	0	.....	5.00	8	20.00	18	45.00
Others	39	13	33.33	2	0	.....	5.13	1	0	0	2.56	30	11	36.67	76.92	5	2	40.00	12.82	1	0	.....	2.56	8	20.51	17	43.59
Unspecified[a]	30	9	30.00	2	1	50.00	6.67	3	0	0	10.00	20	6	30.00	66.66	3	1	33.33	10.00	2	1	50.00	6.67	10	33.33	5	16.67
Combined therapy																											
Totals	188	60	31.91	.....	.....	.....	.....	8	0	0	4.26	139	43	30.94	73.93	37	16	43.24	19.68	4	1	25.00	2.13	42	22.34	71	37.77
Type I	56	8	14.29	.....	.....	.....	.....	3	0	0	5.36	44	7	15.91	78.57	9	1	11.11	16.07	.....	.....	.....	.....	13	23.21	17	30.36
Type II	29	6	20.69	.....	.....	.....	.....	.....	.....	.....	.....	25	6	14.00	86.21	3	0	.....	10.34	1	0	.....	3.45	5	17.24	7	24.18
Type III	26	15	57.69	.....	.....	.....	.....	1	0	0	3.85	16	9	56.25	61.54	9	6	66.67	34.61	.....	.....	.....	.....	4	15.38	10	38.46
Types V, VII, VIII and XIV	42	14	33.33	.....	.....	.....	.....	2	0	0	4.76	28	10	35.71	66.67	10	4	40.00	23.81	2	0	.....	4.76	8	19.05	23	54.76
Others	31	16	51.61	.....	.....	.....	.....	1	0	0	3.22	23	10	43.48	74.19	6	5	83.33	19.35	1	1	100.00	3.22	10	32.26	13	41.94
Unspecified	4	1	25.00	.....	.....	.....	.....	1	0	0	25.00	3	1	33.33	75.00	.....	.....	.....	.....	.....	.....	.....	.....	2	50.00	1	25.00

[a] Unspecified in the chemotherapy group includes cases in which a pneumococcus was recovered from the blood stream but not typed.

[b] The four bacteremic pneumonias included in the combined series occurred in cases in which the pneumococcus from the blood stream was not typed and two or more typed pneumococci were recovered from the sputum.

EFFECT OF AGE ON CASE FATALITY RATE

Pneumonia exacts a high toll at the two extremes of life.

Table 6 demonstrates my results to be in accord with this statement. Case fatality rates by age groups show 9.26 per cent for children under 2 years, 1.53 per cent for children from 2 to 12 years, 7.73 per cent for the group from 13 to 60 years, and 23.99 per cent for patients over 60 years. Obviously, therefore, any series showing a predominance of patients of the age group under 2 and over 60 would be penalized. A predominance of the age group 2 to 12 would be a distinct advantage.

The age group distribution for sulfathiazole and sulfapyridine are comparable, with comparable therapeutic effectiveness of each of the drugs within any age group. The drug alone versus the combined therapy group shows certain significant differences. The drug alone group has a decided predominance of patients under

8. Tilghman, R. C., and Finland, Maxwell: Clinical Significance of Bacteremia in Pneumococcic Pneumonia, Arch. Int. Med. **59**: 602 (April) 1937.

drug alone than in the combined therapy group. These results do not confirm the statement that all patients over 40 should be treated with combined therapy. Obviously, many patients over 60 do just as well on the drug alone, and age itself is not an indication for combined therapy. Age distribution does not explain the discrepancy in the case fatality rates in the combined therapy versus the chemotherapy group. Some factor as yet not discussed must be present to account for this finding.

EFFECTS OF BACTEREMIA ON CASE FATALITY RATE

A severe test of the efficacy of any therapeutic agent is its effect on bacteremic pneumonias, for it is well known that the case fatality rate is from three to eight times as high as in an otherwise comparable series of nonbacteremic patients. Tilghman and Finland [8] have shown in a large series of pneumonia patients, treated and untreated, a case fatality rate of 77.49 per cent in bacteremic as compared with 28.09 per cent in nonbacteremic patients. Our results are comparable since they show the same relationship to exist. In 376 bacter-

emic patients treated with either the drug alone or the drug combined with serum, the case fatality rate was 29.52 per cent as compared with 9.32 per cent in the nonbacteremic series. Obviously, again a group with a preponderance of cases showing this condition would suffer a severe penalty.

Quite by chance there were 188 patients with pneumococcic bacteremias in the combined therapy group and the same number in the chemotherapy group.

Table 7 presents a detailed breakdown of the bacteremic cases in the two groups. The case fatality rate in the combined therapy group is 31.9 per cent as compared with 27.13 per cent for the chemotherapy group. These results are comparable. The type distribution in the two groups shows no significant differences. The unspecified cases in the chemotherapy group tend to raise rather than lower the total case fatality rate.

Age distribution is almost identical for the two groups and age group for age group the case fatality rate is at least as low or lower in the chemotherapy group.

Complications of the disease and incidence of accompanying conditions or concurrent diseases, which previously have been shown to be important factors in prognosis, are comparable in the two groups.

Especially interesting are the results with type III organisms, which heretofore have been associated with an extremely high case fatality rate, 98.3 per cent in a series of 118 bacteremic cases reported by Tilghman and Finland.[8] Fifty-two cases presented here show a fatality rate of 51.9 per cent, still a high rate but by comparison extremely low. An identical number of cases of type III pneumonia appear in each therapy group with a comparable distribution by age group. In every instance the fatality rates are as low or lower in the chemotherapy group. The percentage of cases associated with other illnesses as specified previously is identical.

Not shown in table 7 for the sake of simplicity is the effect of sulfathiazole and sulfapyridine on bacteremia. They were equally effective in controlling this condition. My results indicate that combined therapy is no more efficacious in bacteremic pneumonia than is the drug alone, and therefore its presence does not constitute an indication for drug and serum treatment.

A careful analysis of this series from the standpoint of the most important factors that can influence the prognosis in pneumonia has been made. A significant factor has not yet been found to account for the increased case fatality rate in the combined therapy group.

Certainly serum is not harmful in the treatment of pneumonia and, therefore, some reason for this difference must be present.

Bacteremia in pneumonia has been considered a prime indication for the use of combined therapy and, therefore, one should expect to find a much higher bacteremic incidence in the combined therapy group than in the chemotherapy group. Such is the case, for the combined therapy group shows bacteremia in 25.7 per cent of the cases in which culture was done as compared with 6.3 per cent for the chemotherapy group (table 8).

If one assumes that cases in which culture was done are representative of the combined therapy group and applies a correction factor to the chemotherapy group, making a hypothetic group with a comparable bacteremic incidence, then type for type, age group for age group, the case fatality rate becomes almost identical in the two therapy groups. Discrepancies as noted throughout the paper are eliminated and comparable results in the two groups are now apparent. The major difference in the two groups is the bacteremic incidence. Since it has been shown that chemotherapy is as effective in this particular group of patients as in the group with combined treatment and that all other factors are relatively comparable, it would appear that the burden of proof of the advantages of combined therapy over the drug alone rests with those who advocate such treatment.[9]

UNTOWARD REACTIONS

The appraisal of the efficacy of any form of therapy must take into consideration the undesirable effects of the therapeutic agent itself. In this series severe toxic reactions of either of the chemotherapeutic agents have been infrequent and need not greatly concern the physician in making a choice of therapy for his pneumonia case.

As has been the experience of others,[3] vomiting has been less frequent and less severe with sulfathiazole than with sulfapyridine. Drug fevers and drug rashes were slightly more prevalent with the former. Anemia and leukopenia were less frequent among the patients treated with sulfathiazole.

Hematuria occurs with approximately equal frequency with the two types of treatment.

TABLE 8.—*Mortality in Relation to Blood Cultures*

	Positive Cultures			Percentage Positive	
	Cases	Deaths	Case Fatality Rate	Cases	Deaths
Chemotherapy	188	51	27.13	6.26	17.89
Combined therapy	188	60	31.91	25.68	42.86
Total	376	111	29.52	10.07	26.12

Three fatalities have been attributed to the use of the drug in 14,648 cases: One from exfoliative dermatitis following sulfathiazole therapy; one from obstructive uropathy and anuria following the use of sulfapyridine, and the third from leukopenia and acute agranulocytosis following the use of sulfapyridine.

Serum reactions were of the usual variety, frequency and severity in the series. One fatality was attributed to the serum used.

COMMENT

My concern in this paper has been an evaluation of specific therapeutic agents in the treatment of pneumonia. All agents reported herein have been effective in reducing pneumonia deaths.

From the material presented, it is apparent that the etiologic agent, the distribution of the pneumococcus type, the age of the patient, the presence of a complication of the disease, the presence of concurrent diseases, the interval between the onset of pneumonia and the beginning of therapy and the presence of bacteremia all exert a definite influence as to the ultimate outcome of the illness, regardless of the therapeutic agents used.

Little difference is demonstrable in the ability of sulfapyridine and sulfathiazole to influence the outcome of pneumonia under any circumstance. The case fatality rates in this series were comparable for the two drugs in a comparable group of cases. Sulfathiazole is probably the drug of choice, since vomiting, an undesirable side effect of chemotherapy, is encountered only half

9. The paper by Plummer and his associates (Chemotherapy versus Combined Chemotherapy and Serum, J. A. M. A. **116**: 2366 [May 24] 1941) read by the author after completion of this paper tends to confirm this impression.

as frequently as with sulfapyridine and is much less severe when it does occur. This is important to the practitioner, especially in his private practice. Drug fever and drug rash were more common with sulfathiazole; anemia and leukopenia were more common with sulfapyridine. Other toxic reactions were comparable. No difference was apparent in the relative influence of the two drugs on complications of the disease.

On the basis of experimental studies in animals and in vitro we were led to expect that a combination of serum and chemotherapy would be more efficacious than the drug alone. This finding is not substantiated in the series just presented. Our results do not confirm the generally accepted indications for serum therapy in addition to the drug.

At present I believe that the best method of therapy in susceptible pneumonia is that after collection of base line specimens (sputum and blood culture) sulfathiazole should be given. Patients who fail to respond to chemotherapy in from twenty-four to thirty-six hours should have serum in addition. Serum is of value in those cases in which untoward reactions from chemotherapy require its discontinuance early in the disease. Chemotherapy gives the best results when started early, and its use is indicated as soon as the diagnosis of pneumonia can be made.

Failures with any form of therapy still occur and are most frequent in infancy and old age, in patients treated late in the disease and in those with conditions complicated by other preexisting severe systemic illnesses. Less than 50 per cent of pneumonia deaths occur in otherwise healthy persons.

SUMMARY AND CONCLUSIONS

1. The case fatality rate in the series of 15,251 cases of pneumonia is 9.19 per cent. The vast majority of the patients were treated with sulfapyridine or sulfathiazole, either alone or combined with serum.

2. All specific therapeutic agents used demonstrated their ability to lower anticipated case fatality rates in any given group.

3. Sulfathiazole appears to be the chemotherapeutic agent of choice at the present time, showing an equal therapeutic effectiveness to sulfapyridine with fewer untoward reactions—particularly less vomiting.

4. No inclusive statement can be made as to any group of patients who should receive serum in addition to chemotherapy. The pneumococcus type alone, the age group alone, the bacteremias alone, or associated systemic diseases do not constitute an indication for combined therapy. Clinical judgment is essential, and for those patients extremely ill and in whom prompt recovery is necessary early combined therapy is probably indicated. Others should have serum in addition, if an early response to chemotherapy alone is not manifest or early toxic reactions require discontinuance of the drug.

5. Complications of the disease apparently are low in any specifically treated series of cases.

6. Severe toxic reactions of chemotherapy are infrequent and need not greatly influence the physician in choosing his therapeutic agent in pneumonia.

7. Early use of chemotherapy for best results should be stressed.

8. Sharp reductions in pneumonia deaths will result from extension of specific therapy to all susceptible pneumonia patients.

ABSTRACT OF DISCUSSION

Dr. John J. Shaw, Philadelphia: About three years ago the state of Pennsylvania inaugurated a new setup in pneumonia control programs. After careful planning and with the complete cooperation of the state medical society and its pneumonia commission the program began operation in the fall of 1939. It consisted in the establishment of one hundred and eighty pneumonia control stations conveniently located throughout the state. Each station was prepared to furnish the physician with serum in any type, sulfapyridine and any laboratory service necessary for proper diagnosis, or for observation of the patient while under therapy. Not knowing what therapeutic agent or combination of agents was most effective, all were made available. A public health education program augmented our pneumonia control efforts. Numerous educational talks were given to the lay groups, and many pneumonia symposiums were held in the county medical societies in order to bring every one up to date in the treatment of pneumonia. The first year of operation showed an overall case fatality rate of just over 10 per cent, which, when compared to the 35 per cent previously operative in untreated pneumonia, shows phenomenal progress. Pennsylvania in 1931 had the eighth highest death rate of any state in the United States; today it is forty-third. Complete team work between the state medical society and the state department of health insured the immediate success of this program. The results of our efforts have been described today by Dr. Stahle. Chemotherapy has made practical the treatment of the pneumonia patients at home. Ready accessibility and ease of administration will greatly increase the total number of cases coming under therapy. Ninety per cent of our pneumonia patients treated were hospitalized previous to 1939. In the past two years 50 per cent of them are being treated by their family physicians at home. The use of serum has gradually diminished since the advent of chemotherapy. On the surface this seemed to be a lamentable fact, but most recent material available shows no outstanding benefits for combined therapy over the drug alone. The experience of Pennsylvania's pneumonia program seems to concur with this impression. This program has proved conclusively that pneumonia mortality can be much reduced by giving adequate care to victims. Complete cooperation between organized medicine and public health medicine in pneumonia control programs will result in fewer pneumonia deaths.

Dr. Jesse G. M. Bullowa, New York: Dr. Stahle is to be congratulated on this analysis of a large group of patients; however, a fundamental requirement in statistical study is to make sure that the populations compared are essentially similar, and Dr. Stahle himself says that this has not been determined for his groups. There were probably many more less severely ill patients in the chemotherapy group than in the chemotherapy plus serum group, because it is probable that only the patients who were more severely stricken received serum and they received it when chemotherapy had failed, or very late in the disease or as a last resort. Accordingly, it is not fair to take the analysis at its face value and to conclude that serum plus chemotherapy was either without value or harmful. In my own smaller series, when chemotherapy and serum were given simultaneously the death rate was either the same as or lower than when only chemotherapy was given. One of the outstanding findings in Dr. Stahle's analysis is the difference in the death rate depending on the pneumococcus type in both series. Apparently this is evidence of the operation of immunity responses. Apparently chemotherapy only reduces the virulence of the invading pneumococcus so that the patient suffers from a milder disease of its specific type. With chemotherapy the usual general death rate is 8 or 9 per cent, which in part may be due to failure of the immunity mechanism in patients who die. They might have been saved by serum. By further analysis of his data Dr. Stahle may find a reliable evaluation of chemotherapy and chemotherapy plus serum, under various circumstances. It should be possible to compare the effect of the two therapies in early young patients, in early old patients, in late young patients and in late old patients. It should be determined whether the serum plus chemotherapy was given simultaneously or tandem or, as may have happened, largely

to moribund patients. There is no advantage in giving serum to patients whose own immunity has already secured recovery. These patients are not benefited by serum; they are going to recover in response to chemotherapy alone and swell the recovery in that group. Serum therapy reduced the gross mortality rate from pneumonia one half; chemotherapy reduced it another half. It is this quarter or some of it which may be benefited by the combination, adding augmented resistance to reduction of virulence.

DR. ADOLPH RUMREICH, Bethesda, Md.: Dr. Stahle's report emphasizes the desirability of a frequent evaluation of the various components of public health programs, and of prompt revision of such programs in the light of such studies and of technical advances in general. The Pennsylvania state program is impressive and undoubtedly has contributed to the reduction in recent years of the state's pneumonia mortality. It must be gratifying to Dr. Shaw to observe that the procedures pioneered in his state have recently been formally endorsed without essential changes by the National Research Council and adopted as prescribed routine in the army. The soundness of the program is attested by the change in Pennsylvania's relative rank in respect to pneumonia mortality, as pointed out by Dr. Shaw. This occurred in spite of the presence within the state borders of important segments of the two highest risk injuries; namely, steel manufacturing and coal mining. Unfortunately, most of the other states have not achieved a comparable improvement in this serious public health problem. Preliminary reports indicate that in 1940 more than ninety thousand persons died in the United States of pneumonia, a 14 per cent reduction over the year preceding the introduction of specific chemotherapy for pneumonia. This is far short of what we were led to expect and falls far short of realizing the potentialities of the weapons now at our disposal. Dr. Stahle has stated that one half of the deaths in his series were due to pneumonia without complicating disease. When we consider that his series embraces all age groups, and that probably over thirty thousand pneumonia deaths in the United States in 1940 were in the age group 15 to 64, we see that our complacency at present about the pneumonia problem is unjustified and that we have a long way to go before we can boast that all has been done that can be done to stop this serious waste of manpower.

DR. DALE C. STAHLE, Harrisburg, Pa.: It must be admitted that a more severely ill group of patients were included in the series treated with combined therapy, and this report was presented with that supposition being stated. I do not advocate the complete discontinuance of specific antipneumococcus serum in the treatment of pneumonia. Certainly there are definite indications for its use, and the physician should be prepared to use serum should it become necessary. At the present time the importance of drug resistance is not known. There is no reason to believe that those patients whose infecting organism has developed a drug tolerance will not respond satisfactorily if specific antipneumococcus serum is given. As Dr. Bullowa points out, there are some patients who do not respond to drug therapy alone and with the added boost of specific serum might recover where otherwise they would not. It is extremely difficult, however, to say that any patient would have died had serum not been used or that any patient would have recovered had serum been used in addition to chemotherapy. Likewise, it is impossible to know what would have happened to the combined series group presented if the drug alone had been given or what might have happened to the series treated with the drug alone if combined therapy had been given. My purpose in this paper was to point out that too much serum is being given under the indications for combined therapy operative in the past. Dr. Bullowa mentioned that serum is often used on patients whose immunity mechanism has already done what the serum would do if given, and further administration is of no advantage. This series was presented to indicate what the results of therapy have been in a large group of patients. The final word with regard to the place of specific antipneumococcus serum in the treatment of pneumonia must come from groups working in carefully controlled clinics where all factors which are of importance in prognosis in pneumonia can be carefully evaluated.

ADYNAMIC ILEUS AND THERMAL INFLUENCES ON GASTRIC AND INTESTINAL MOTOR ACTIVITY

J. DEWEY BISGARD, M.D.
OMAHA
GUY M. MATSON, M.D.
DETROIT
AND
JEROME HIRSCHMANN, M.D.
LOS ANGELES

The terms adynamic ileus and paralytic ileus are used to designate a condition characterized by distention and relative inactivity of the bowel. As implied by the latter term, there prevails an opinion that the condition is the result of paralysis of the bowel. This is implied also in much that has been written, and there have been statements from sources of authority that intestinal motor activity is totally or virtually suspended for many hours or even days after abdominal operations. These opinions, as will be shown, are not supported by factual evidence, either clinical or experimental.

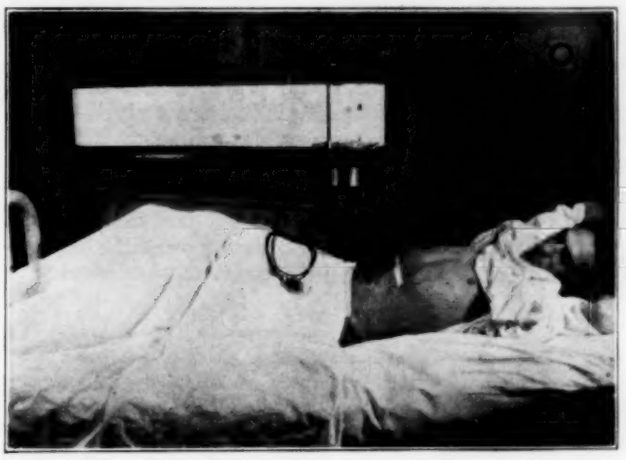


Fig. 1 (case 2).—Residual ileostomy following exteriorization resection of a gangrenous loop of the ileum. Apparatus for recording peristaltic activity. The tube emerging from the stoma connects an inflated balloon within the ileum to the U tube manometer. An identical tube and balloon are displayed on the sheet across the patient's thighs. Changes of pressure within the bowel are transmitted from the balloon to the ink writer through the U tube. The ink writer records the pressure changes on the kymographic drum. (Courtesy of Surgery, Gynecology and Obstetrics.)

As to clinical evidence, our interest in the subject was aroused by experiences with the Miller-Abbott tube. It was observed that this tube traveled down the small bowel as readily and rapidly in the patient with so-called paralytic ileus as in the patient with normal intestinal function. Obviously, for a state of paralysis this phenomenon presents an incongruous situation. For a logical explanation it must be assumed that in a state of ileus the stretching of the bowel wall from distention is in large measure responsible for the lack of motor activity. It is a well known fact that overstretched muscle loses much of its ability to contract. Furthermore, the function of the muscle is much impaired by the relative state of ischemia which results from the stretching of the blood vessels in the wall of the bowel. As the stretching is relieved by deflating the bowel through the indwelling tube, motor activity is promptly resumed. This we have verified by the flu-

From the Department of Surgery, University of Nebraska College of Medicine.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

oroscopic examination of 2 patients who were given barium sulfate orally after the Miller-Abbott tube had traveled a few feet down the small bowel.

Another incongruous situation is observed in the relief of ileus which may follow the paralysis induced

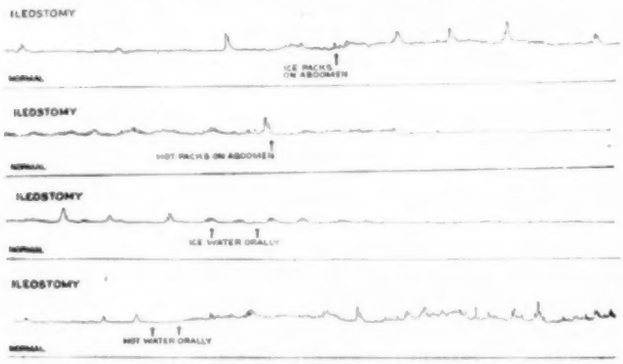


Fig. 2 (case 2).—Recordings made on the fourth and fifth postoperative days. The peristaltic contractions were infrequent although present and fairly vigorous. The application of ice packs to the abdominal wall increased the tonus of the bowel and the frequency and the amplitude of peristaltic contractions; hot packs inhibited motor activity, as did the ingestion of ice water orally, and hot water given orally stimulated motor activity. (Courtesy of Surgery, Gynecology and Obstetrics.)

by spinal anesthesia. Here is presented the paradoxic situation of relieving paralysis by inducing paralysis. From this bit of evidence the probable mechanism of ileus may be conjectured. By inducing paralysis, spinal anesthesia presumably releases the inhibiting action of the dorsolumbar sympathetic nervous system on the motor activity of the bowel and leaves the vagus unopposed. It is probable, therefore, that ileus results, at least in part, from an imbalance between the antagonistic actions of the dual innervation of the bowel.

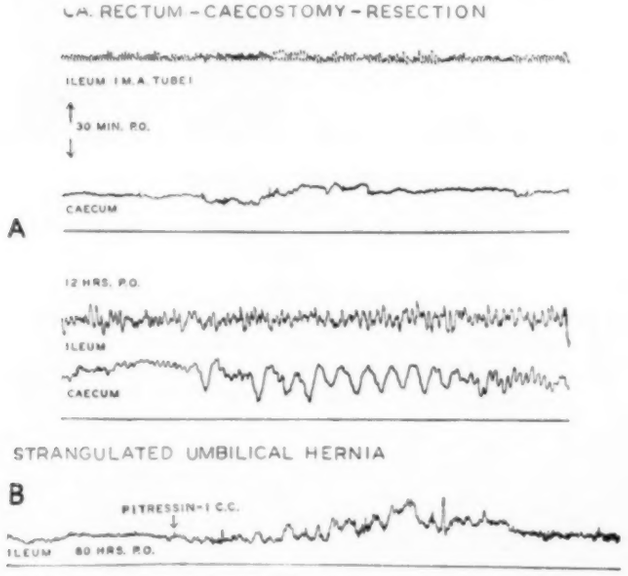


Fig. 3.—*A* (case 3), simultaneous recordings of the motor activity of the ileum through an inflated balloon passed orally and of the ascending colon through a balloon passed through a cecostomy stoma. Peristaltic activity was definitely present, although of subnormal vigor, thirty minutes after operation. By twelve hours the motor activity was in excess of normal. This evidence is not consistent with the theoretic statement that after an abdominal operation the bowel is totally inactive for many hours. *B* (case 4), a tracing made in a case in which adynamic ileus developed after reduction and repair of a strangulated umbilical hernia. Contractions, although feeble, are discernible. An effective dose of pitressin was followed promptly by a noticeable increase of tonus and of the amplitude and duration of peristaltic contractions.

Complete paralysis of the bowel does occur in the presence of diffuse or generalized peritonitis, and it is our opinion that the term paralytic ileus should be reserved for and applied only to this condition.

EXPERIMENTAL OBSERVATIONS

The motor activity of the stomach and the bowel is enormously influenced by many factors. Some of these, such as emotional influences, are difficult or impossible to control. For this reason, studies of motor activity are subject to gross errors of interpretation and from them conclusions can be drawn only in those instances in which controlled factors of influence repeatedly produce the same or consistent responses. With this as a criterion the following observations are reported.

As in some studies previously reported,[1] continuous kymographic recordings were made of gastric and intestinal motor activity. These recordings registered the variations in pressure exerted on indwelling compressible rubber balloons by the peristaltic contractions of the viscera studied. Variations of pressure on these inflated balloons were transmitted through the Miller-Abbott tubes to which they were attached and thence

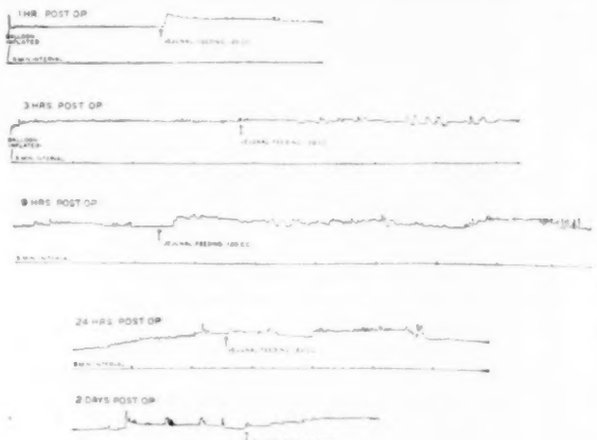


Fig. 4.—Tracings from a tube indwelling the distal loop of the jejunum after an anterior Polya operation, showing greatly diminished motor activity during the first three postoperative days. By the fifth day the motor activity was normal and by the seventh day hyperactive. Peristaltic contractions, although feeble, were discernible at all times, beginning one hour after operation. Jejunal feedings in each instance increased motor activity.

through U tube manometers containing bromoform to ink writers which inscribed the records. The apparatus with a balloon in the ileum passed through an ileostomy stoma is shown in figure 1. For recording the activity of the large bowel the balloons were introduced through colostomy stomas, and for recording the activity of the stomach and of the small bowel they were introduced by means of nasoesophageal intubation.

ILEUS ASSOCIATED WITH PERITONITIS

Records were made in 2 cases of ileus associated with diffuse peritonitis. Brief histories follow.

CASE 1.—A man aged 66 came under observation with diffuse peritonitis, resulting from appendicitis, of four days' duration. Death ensued twenty-eight hours later. The nonoperative treatment instituted included the passing of a Miller-Abbott tube for the purpose of applying continuous suction. The tube passed through the pylorus and was observed through roentgenograms

1. Bisgard and Johnson.[2] Bisgard and Nye.[3]

to have passed some distance down the small bowel. Records made eighteen, twelve and six hours before death showed complete absence of motor activity.

CASE 2.—A man aged 26, critically ill with a strangulated internal hernia, a gangrenous loop of ileum and definitely established diffuse peritonitis, was operated on after one and one-half

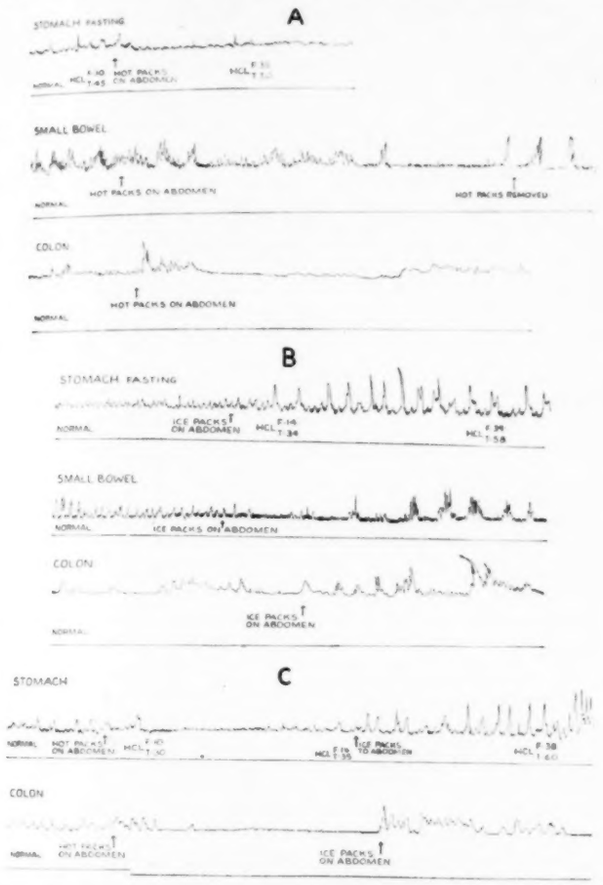


Fig. 5.—*A*, recordings of motor activity of the stomach, the small bowel and the colon before and after covering of the abdominal wall with hot water bottles. After an interval of five to ten minutes, tonus became slightly diminished and peristalsis greatly inhibited in all three segments. The acidity of the gastric contents remained unchanged. *B*, the application of ice bags to the abdominal wall produced vigorous motor responses in the stomach, the small bowel and the colon, as indicated by an increase in tonus and in the amplitude and duration of contractions. These responses did not come on immediately but followed a latent interval varying from five to fifteen minutes. There was a big increase in gastric acidity. *C*, recordings of the effects on the stomach and the colon of following external hot applications with ice packs. Ice was applied immediately after removal of the hot packs. The inhibitory response to the hot applications was converted almost immediately to the motor response to cold. Furthermore, gastric acidity remained unchanged during the application of heat and increased greatly after the application of ice. (Courtesy of Surgery, Gynecology and Obstetrics.)

hours had been devoted to intravenous hydration therapy, a blood transfusion and continuous gastric suction. At operation the gangrenous loop was exteriorized and resected between clamps, the two ends being left as ileostomy stomas. The proximal clamp was removed after forty-eight hours, and recordings through this stoma were made daily. For two days there was no evidence of motor activity. On the fourth postoperative day the pulse rate was much reduced and the abdomen much softer and, in keeping with this evidence of resolution of peritonitis, fairly vigorous though infrequent peristaltic contractions were recorded. On that day and the following one the records displayed in figure 2 were obtained.

Since it had been observed in the studies mentioned [1] that the normal bowel made definite responses to thermal influences it was decided to test the response of this infirm bowel to the same agents. As in the normal bowel, the application of ice packs to the abdominal wall caused a prompt increase in tonus and in the frequency and amplitude of peristaltic contractions. The application of hot packs to the abdominal wall completely inhibited motor activity. Taking ice water by mouth likewise inhibited it, while ingestion of hot water increased it. These responses are shown in figure 2.

POSTOPERATIVE ILEUS

In previously reported studies [2] it was shown that the motor activity of the stomach and the bowel both during and after operation was influenced as much by the preoperative and postoperative medication and anesthesia as by operative trauma; also that the various anesthetics varied much in their effects on gastrointestinal motor activity. Ether, nitrous oxide and barbiturates have an inhibiting action, while spinal anesthetics, cyclopropane and avertin with amylene hydrate have either a stimulating effect or no appreciable effect.

Recordings of the activity of the bowel in 6 patients made during and at frequent intervals after clean and uncomplicated abdominal operations performed with one of the noninhibiting anesthetics at no time showed complete abolition of peristaltic activity and showed reduced activity for not more than twelve hours.

CASE 3.—A man aged 58 with an obstructing carcinoma of the rectosigmoid junction was relieved of obstruction by a cecostomy, and eight days later the rectum was resected in one stage with the patient under spinal anesthesia. The day

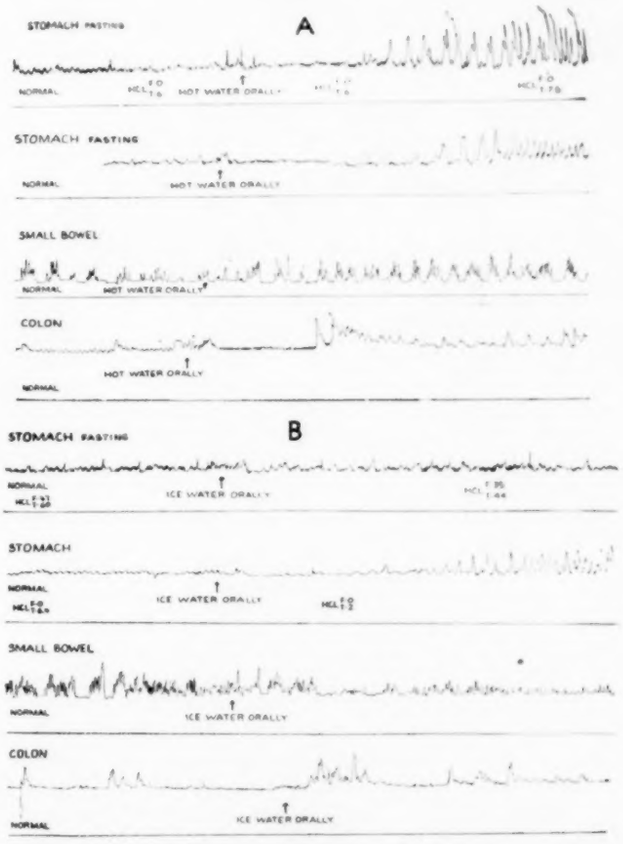


Fig. 6.—*A*, hot water taken by mouth caused a vigorous motor response in the stomach and definite but less vigorous stimulation of the small bowel and the colon. The periods of increased activity were preceded by intervals of inhibition lasting from five to twenty minutes. *B*, the administration of ice water by mouth had little or no effect on gastrointestinal activity. Gastric acidity was decreased, as a result, presumably, of both dilution and inhibition. (Courtesy of Surgery, Gynecology and Obstetrics.)

before the resection was done a Miller-Abbott tube with a balloon had been introduced and carried into the ileum. A second balloon was threaded into the ascending colon through

2. Bisgard, J. D., and Johnson, E. K.: The Influence of Certain Drugs and Anesthetics on Gastrointestinal Tone and Motility, Ann. Surg. **110:** 802 (Nov.) 1939.

the cecostomy stoma immediately after operation, and recordings of the activity of the ileum and of the colon were made simultaneously. In recordings made thirty minutes and three hours after operation, motor activity, although of subnormal vigor, was definitely apparent. Twelve hours after operation and thereafter both ileum and colon showed activity in excess of normal. Two of these recordings appear in figure 3 *A*.

While these studies were being carried out only 1 patient with uncomplicated and obstinately adynamic postoperative ileus was available for study:

CASE 4.—An obese woman aged 52 was operated on to relieve strangulation of a long loop of the ileum in an umbilical hernia. An alarming degree of distention developed fifty-two hours after operation, despite the application of constant suction through a Miller-Abbott tube in the proximal portion of the small bowel. This tube, which had been passed into the stomach before operation, was threaded through the pylorus into the jejunum at operation. Repeated enemas and 2 minim (0.1 cc.) doses of pitressin gave meager results. Finally a copious evacuation with a satisfactory diminution of distention followed the application of hot packs to the abdominal wall and the administration of 1 cc. of pitressin.

Records made during this period showed rhythmic peristaltic contraction to be present, though it was feeble. After the administration of the small doses of pitressin there was a slight increase in tonus and in the duration and amplitude of the

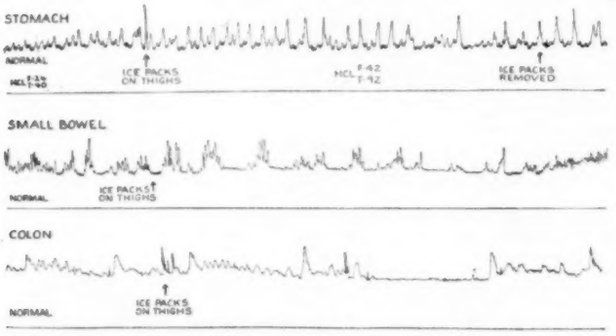


Fig. 7.—Ice packs applied to two thighs increased both gastric acidity and motor activity of the stomach. The ileum and the colon showed no definite or consistent response. (Courtesy of Surgery, Gynecology and Obstetrics.)

segmental contractions. After the large effective dose there was a big increase in tonus and in the amplitude and duration of peristaltic contractions, as shown in figure 3 *B*. Obviously the muscularis of the bowel in this case was capable of vigorous contraction when effectively released from inhibition and stimulation.

In 2 cases the motor activity of the proximal portion of the jejunum immediately following gastrojejunal anastomosis was studied. In both cases an anterior Polya operation had been performed; in one a gastric carcinoma was resected and in the other a gastric ulcer. In each case, after the anastomosis had been completed the ballooned tip of the Miller-Abbott tube which had been passed into the stomach previously was threaded through the stoma into the distal loop of the jejunum for a distance of 10 or 12 inches (25 or 30 cm.). A second (Levin) tube, introduced into the stomach through a gastrostomy opening in the stump, was also threaded through the stoma and down the distal loop of the jejunum for a distance of approximately 16 inches (40.6 cm.). Through this tube hourly jejunal feedings were administered, being begun immediately after operation. Records of motor activity of the jejunum were obtained by means of the inflated balloon placed just proximal to the point where the feedings were delivered. The records (fig. 4) showed that the motor activity, which was barely perceptible one hour after operation and increased but feeble two hours later, was fairly active within nine hours, normal in five days and hyperactive seven days after operation. Immediately after each feeding there was an increase in tonus and peristaltic activity.

An adequate explanation for the failure of a prompt return of normal motor activity in the foregoing 2 cases is not immediately apparent. There is good reason to believe that both the vagus and the sympathetic innervation of the bowel were much disturbed during the execution of gastric resection. There is also a theory that the stomach acts as a pacemaker for much of the intestinal tract.

THERMAL INFLUENCES

A detailed account of the influence of hot and cold applications on gastric and intestinal motor activity and on the secretion of hydrochloric acid was made in a previous communication.[3] A brief summary of these data follows. After establishing for each patient studied reasonably normal tracings from balloons indwelling the stomach and the small and the large bowel the following influences were brought to bear at successive periods of observation: (1) The abdominal wall was completely covered with hot water bottles for thirty minutes, (2) the abdominal wall was covered with ice bags for thirty minutes, (3) both thighs were covered with hot water bottles for thirty minutes, (4) both thighs were covered with ice bags for thirty minutes, (5) hot water was administered orally and (6) ice water was administered orally. During the period of recording the motor activity of the stomach, samples of the gastric content were aspirated and analyzed for acidity.

Complete series of records were obtained of responses of the stomach in 8 patients, of the small bowel in 6 and of the colon in 4. The responses were sufficiently consistent to be reported collectively as typical of the organ and the experimental factor. Heat applied to the abdominal wall inhibited motor activity of the stomach, the small bowel and the colon (fig. 5). Conversely, cold stimulated tonus and peristaltic activity. When heat or cold was applied directly to the wall of the stomach by having the patient drink hot or cold water the responses were reversed. Heat stimulated and cold had a slightly inhibiting effect on both gastric and intestinal motor activity (fig. 6). Hot applications on the thighs had no effect, and cold ones influenced only the stomach, producing a moderate motor response (fig. 7). Cold applications on both abdominal wall and thighs caused a big increase in both free and total hydrochloric acid.

From the physiologic data mentioned there may be obtained some guidance for the proper clinical uses of hot and cold applications. If it is beneficial, as is generally believed, to inhibit the motor activity of the gastrointestinal tract and thereby place it at rest as far as possible in the presence of inflammatory lesions, such as appendicitis and peritonitis, and of bleeding lesions, such as bleeding peptic ulcer, then hot applications and not ice bags are indicated. In the case of peptic ulcer the increase in gastric acidity following cold application to the abdominal wall also is undesirable.

During the past two years we have lavaged the stomach with ice water in 4 cases of actively bleeding ulcer. Either because of or in spite of this therapy the bleeding promptly ceased in 3 cases. Theoretically, direct chilling of the wall of the stomach should produce vasoconstriction (of bleeding vessels) in addition to lowering acidity and inhibiting motor activity.

3. Bisgard, J. D., and Nye, Dan: The Influence of Hot and Cold Application on Gastric and Intestinal Motor Activity, Surg., Gynec. & Obst. **71**: 172 (Aug.) 1940.

The increase in gastric acidity which follows chilling of the body surface may explain the recurrence of peptic ulcer in the fall and the spring, when there are rapid and radical changes in temperature.

Throughout this discussion the term motor activity has been used and the term motility avoided. The records measured only peristaltic activity and tonus. Motility refers to the movement of gastric and intestinal contents, and this is dependent not only on peristalsis but on the patency of the sphincters and on coordinated activity between adjacent segments of the stomach or the bowel. Peristalsis is ineffectual when disorganized. In the normal process of both segmental and mass movements of intestinal contents the various segments of the bowel contract and relax alternately in well integrated fashion. As a given segment contracts and expels its contents the adjoining distal segment relaxes to receive it. Failure of this distal segment to relax not only interferes with the normal movement of intestinal contents but gives rise to cramplike pain, such as colic and gas pain. Hot applications are more effective than cold ones in relieving gastrointestinal cramps, because their inhibiting effect relaxes spasm and thereby facilitates coordinated activity.

In regard to the first fluids taken by mouth by patients after operation, we have observed no difference in the response to cool and to warm fluids except that cool ones are more palatable. Ice water, however, is definitely less well tolerated.

1418 Medical Arts Building.

ABSTRACT OF DISCUSSION

Dr. James M. Winfield, Detroit: With regard to the concept that the term "paralytic ileus" should be reserved for cases of peritonitis, I disagree with Dr. Bisgard and his co-workers. I have found that the balloon tipped long tube progresses satisfactorily in the presence of ileus associated with peritonitis, and accordingly the term denoting paralysis is not correct. I prefer to call ileus associated with peritonitis "patent inactive ileus" or "adynamic ileus." The relief of distention permits the bowel to become active, even though its entire power is not present. In the presence of ileus the use of heat either by packs or by a light cradle, in conjunction with tube decompression, not only may affect motor activity but, as Mueller has pointed out, may favor a more rapid and efficient return of blood supply to the impaired intestine. I do not favor the use of pitressin for effect on the small bowel, as it is questionable just how much influence this drug has on the jejunum and ileum, the large bowel primarily being stimulated. As to the effect of heat and cold applied externally to the abdomen, it is interesting to note that heat has been used in the presence of intra-abdominal infection for years in numerous clinics. No doubt the beneficial effect noted may be explained by the findings of the authors that external heat decreases gastrointestinal motor activity. As was mentioned in the paper, the delayed return of motor activity following gastric resection was notable and it was stated that this may be due to the fact that the stomach, in the role of a pacemaker for the intestinal tract, was profoundly affected. In some bile experiments on human beings, although the stomach showed some stimulated motor response to bile, the intestinal tract as a whole gives evidence of a considerable decrease in emptying time. Thus it is quite possible that the stomach partially initiates the effectual and coordinated intestinal activity. Also it is well known that the drinking of warm fluids favors evacuation of the bowel. Many of the points brought out in the paper have a direct application to clinical practice.

Dr. Charles W. Mayo, Rochester, Minn.: In these days of costly therapeutic measures it is refreshing to hear a paper on an inexpensive one—a paper which demonstrates that it is not the degree of cost which is the gage of efficacy of a therapeutic measure but rather its judicious use. I was interested to hear that cold on the abdominal wall or thighs caused large increases in free and total hydrochloric acid; that external temperature therefore may be the cause of exacerbation of duodenal ulcer in the spring and fall. Although it is true that heat and cold may be contributing factors, I believe one which is even more basically sound is that variation in water intake from the heat of the summer to the cold of the winter is of greater influence on gastric acidity, on the basis of dilution. We are familiar with the synergistic action of certain drugs, such as pitressin and morphine, on the small and large bowel; yet in this presented work there is no evidence that heat and cold have such synergy in relation to the small or large bowel. Believing in the law that for every action there is an opposite and equal reaction, I am prompted to the question What was the duration of the experiment of the application of heat and cold to the abdomen? For instance, if heat applied externally gives an initial quieting effect, might it not give, if continued, a stimulating effect, the time of the opposite action being an individual variable? It would seem that hibernation and quiescence might be possible examples of the effect of continued cold on intestinal peristalsis.

Dr. J. Dewey Bisgard, Omaha: In answer to Dr. Mayo's question, we did try to determine how long the effect of the thermal agents lasted and found that it lasted about an hour, as a rule. However, if after an interval a reapplication was made there was again a response but of a somewhat lesser degree.

"COLI METABOLIN" THERAPY IN HAY FEVER

PSYCHOGENIC BENEFITS

MARY HEWITT LOVELESS, M.D.
AND
HORACE S. BALDWIN, M.D.
NEW YORK

This investigation tests the recent assertion by Elsbach [1] that metabolic products of the colon bacillus have therapeutic value at least equal to that of specific inoculations in allergy. Elsbach reported that 70 per cent of his hay fever group were "cured" and another 28 per cent improved as the result of some nine inoculations of Coli Metabolin (Tosse). He held that this filtrate of Escherichia coli exerts a "desensitizing" influence through the sympathetic nervous system, obviates the need for diagnostic tests and preseasonal treatments and frequently affords relief after the second or third dose.

METHODS AND MATERIALS

After investigating the manufacturing process of Coli Metabolin (Tosse), and finding no contraindication to its use, we treated 20 ragweed-sensitive patients with the product.[2] Most of the courses were begun during the last week of August, the earliest being instituted on Aug. 22, the latest on Sept. 5, 1941. Although the subjects continued to make frequent visits for injections and observation until after October 1, so sharp a decline occurred in the atmospheric pollen content after September 20 (table 1) that clinical information collected after this date was disregarded.

The general plan was to give each patient 2 cc. of Metabolin under the skin daily until five or more doses had been taken or relief of symptoms occurred. As many as twelve consecutive injections were given at daily intervals in some instances. After the initial series

From the New York Hospital and the Department of Medicine, Cornell University Medical College.

1. Elsbach, E. J.: A New Treatment for Hay Fever, New York State M. J. **41**: 1248 (June 15) 1941.

2. The Metabolin was supplied by E. Tosse & Co., Inc., New York City.

of daily injections, Metabolin was administered every one to three days. On the intervening days the patients received physiologic solution of sodium chloride in lieu of the metabolites or else were given no treatment at all. It was hoped thereby to evaluate the psychogenic effect of inoculation per se and to make due allowance for remissions, which occur spontaneously in hay fever.

Each patient kept a daily record of symptoms in terms of slight, moderate and severe hay fever and/or asthma. As a preliminary to statistical analysis, the data obtained from all subjects during the thirty day experimental period were segregated into four groups according to the relative height of the pollen count. Data pertaining to days on which there was little pollen in the air (twenty grains or less per cubic yard) were assigned to the first quartile. Observations which applied to days of increasingly high pollen count were allotted to the second, third and fourth quartiles, respectively, as shown in table 2. Data belonging to each quartile were then classified according to the patient's clinical response to the three conditions of treatment (Metabolin, physiologic solution of sodium chloride and no injection). The frequency with which symptoms were completely relieved, partially relieved, unaltered or made worse in relation to the three types of therapy has been recorded in tables 2 and 3. Finally, comparisons were made between the various sets of figures, differences being tested for significance by means of the chi square and probability (P) values.[3] Sheppard's modification [3] was employed to increase the accuracy of

TABLE 1.—*Ragweed Pollen Granules per Cubic Yard of Air*

(Report of Mr. David Morris based on slides exposed at New York Meteorological Observatory, Central Park, New York.)

	August 1941	September 1941
1	..	332
2	..	81
3	1	18
4	..	12
5	..	168
6	..	237
7	12	192
8	..	63
9	3	57
10	..	126
11	2	37
12	16	24
13	10	5
14	6	20
15	6	35
16	17	24
17	25	20
18	8	18
19	2	22
20	40	14
21	6	5
22	14	6
23	50	6
24	117	6
25	61	10
26	207	2
27	243	3
28	116	7
29	69	5
30	225	6
31	144	(Discontinued)

the chi square test when the number of observations used for comparison was small (ten or less). Values of P which were greater than 0.05 have been regarded as of no statistical significance.

FINDINGS

Complete Relief.—Incidence: Table 3 shows that forty-five of a total of one hundred and ninety-eight, or 23 per cent, of all Metabolin injections were followed by complete disappearance of symptoms within an hour. An equally good effect was obtained after eighteen, or 26 per cent, of the sixty-nine inoculations of physiologic solution of sodium chloride. When the

TABLE 2.—*Frequency with Which Various Clinical Results Occurred Following Inoculations of Metabolin, Physiologic Solution of Sodium Chloride and on Treatment-Free Days*

	Metabolin	Physiologic Saline	No Treatment
First Quartile (20 or fewer grains of pollen per cubic yard of air)			
Complete relief	2	4	8
Partial relief	6	4	2
No change	19	14	50
Worse	5	0	0
Total	32	22	60
Second Quartile (22 to 57 grains of pollen per cubic yard of air)			
Complete relief	9	5	4
Partial relief	5	3	1
No change	23	8	41
Worse	1	0	2
Total	38	16	48
Third Quartile (63 to 126 grains of pollen per cubic yard of air)			
Complete relief	14	4	1
Partial relief	13	3	3
No change	20	5	12
Worse	5	0	0
Total	52	12	16
Fourth Quartile (144 to 332 grains of pollen per cubic yard of air)			
Complete relief	20	5	1
Partial relief	11	1	2
No change	36	13	8
Worse	9	0	0
Total	76	19	11

chi square and P values were determined, this difference between Metabolin and saline therapy was found to be of no significance, as table 4 A shows. This situation obtained in each of the quartiles of pollen count and in all quartiles combined. Of one hundred and thirty-five occasions when no therapy was given, fourteen, or 10 per cent, were associated with symptom-free periods which occurred spontaneously during the hours following the customary time of inoculation.

Duration: The relief was comparable in duration regardless of which inoculum was involved, one to seventeen hours being the range observed for each. In the case of Metabolin, the mean duration of relief following the forty-five efficacious inoculations was six and four-tenths hours as indicated by table 3, the average for all one hundred and ninety-eight Metabolin injections being only one and four-tenths hours. A slightly more lasting relief was associated with the eighteen beneficial saline injections, seven and three-tenths being the average number of hours which elapsed before symptoms returned. The average duration of relief for all saline solution inoculations given was one and nine-tenths hours per injection. The average duration of spontaneous remissions which occurred on days of no therapy was found to be six hours, a figure closely approximating that found for Metabolin and for saline inoculations.

Partial Relief.—Incidence: Tables 2 and 3 list a total of thirty-five occasions when Metabolin produced partial

3. Fisher, R. A.: Statistical Methods for Research Workers, London, Oliver & Boyd, 1932.

relief within an hour, roughly 17 per cent of all metabolite injections thus being followed by partial improvement. In the case of saline injections, this percentage was 16, an almost identical incidence. The chi square and P values (table 4 B) showed clearly that no significance could be attached to these differences in incidence. Partial relief was noted after the customary hour of inoculation on 6 per cent of treatment-free occasions.

Failure to Alter Clinical Course.—Symptoms continued unaltered after approximately half of the Metabolin injections given and after 58 per cent of the control inoculations (table 3). When the chi square and corresponding P values were determined, the difference between the metabolite and control solutions in this respect was not found significant (table 4 C). When, however, the combined figures for the two types of inoculum were compared with that for days when no treatment had been given, a decidedly higher incidence of unchanged symptoms were found for treatment-free occasions (82 per cent, as shown in table 3). This suggested that inoculation per se altered the trend of symptoms. In order to determine in what direction the act of inoculation altered the intensity of hay fever, further comparisons were made.

INFLUENCE OF INOCULATION PER SE

Complete relief occurred after 23.6 per cent of inoculations of both types, whereas spontaneous remissions were noted on only 10 per cent of all treatment-free days. Most of the latter fell in the first quartile, when the atmospheric pollen was at low concentration. The chi square and P values determined for the second and third quartiles showed that complete relief followed inoculations significantly more often than it occurred on days of no therapy. Although this was not the case for the first and fourth quartiles, analysis of the combined data from all quartiles revealed that remissions were definitely increased in frequency if some inoculation had been given (table 4 D).

When the incidence of partial relief was studied, 17 per cent of all inoculations were found to produce this result, whereas only 6 per cent of treatment-free days showed the spontaneous occurrence of partial improvement. In a few instances (10 per cent) the allergic symptoms were made worse by Metabolin inoculations. Exacerbation of symptoms after the usual injection hour was noted on 1.5 per cent of the occasions when no treatment was given but was not observed in relation to saline injections.

On the whole, inoculation per se appeared to benefit the allergic patients, approximately 40 per cent of all injections of either Metabolin or physiologic solution of sodium chloride being followed by partial or complete disappearance of symptoms, whereas similar relief appeared spontaneously in only 16 per cent of the treatment-free days.

TABLE 3.—*Frequency with Which Various Clinical Results Occurred Following Inoculation of Metabolin, Physiologic Solution of Sodium Chloride and on Treatment-Free Days*

	Metabolin			Saline Solution			No Treatment		
	Instances	%	Hr.	Instances	%	Hr.	Instances	%	Hr.
Complete relief	45	22.7	6.4	18	26	7.3	14	10.37	6
Partial relief...	35	17.6		11	16		8	5.9	
No change.....	98	49.4		40	58		111	82.2	
Worse.....	20	10.1		0	..		2	1.48	
Total.....	198	99.8		69	100		135	99.95	

TABLE 4.—*Significance* of Difference in Incidence of Various Clinical Results Following Metabolin, Physiologic Solution of Sodium Chloride and No Inoculation*

	Pollen per Cu. Yd. of Air	Chi Square	P	Difference in Incidence
Test A—Incidence of complete relief after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 20	3.28	>0.05	Not significant
	22 to 57	0.863	>0.3	Not significant
	63 to 126	0.045	>0.3	Definitely not significant
	144 to 332	0.086	>0.7	Definitely not significant
	5 to 332	4.874	0.3	Definitely not significant
Test B—Incidence of partial relief after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 332	0.140	0.7	Definitely not significant
Test C—Incidence of unchanged symptoms after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 332	1.25	>0.2	Definitely not significant
Test D—Incidence of complete relief after either Metabolin or physiologic solution of sodium chloride compared with incidence on days of no treatment	5 to 20	0.416	>0.5	Not significant
	22 to 57	4.27	About 0.04	Significant
	63 to 126	36.33	<0.01	Definitely significant
	144 to 332	0.7	>0.3	Not significant
	5 to 332	41.76	<0.01	Definitely significant

* Determined by obtaining the chi square and P (probability) values.

SUMMARY AND CONCLUSIONS

The claim of Elsbach that Coli Metabolin therapy is preferable to the usual antigen inoculation treatment of hay fever could not be substantiated. Although a degree of short lived improvement was observed among 20 ragweed-sensitive patients given an average of nine inoculations of Metabolin, a "cure" resulted in no instance and the transient benefits were duplicated both in degree and in duration by injections of physiologic solution of sodium chloride. Since the incidence of improvement was significantly greater when either solution was injected than when no treatment at all was given, it was concluded that the benefits of Metabolin therapy are of psychic rather than pharmacologic origin. We feel that there is no valid place for Coli Metabolin in the therapy of hay fever.

Chemical Elements.—Eighty-eight chemical elements have been isolated. Their separation by chemical means is sometimes easy, sometimes very difficult, and the best available tests differ greatly in sensitivity. Spectroscopic analysis provides a test for all constituents at once; but these tests too are unequally sensitive. Fortunately the two methods supplement each other. The composition of the earth's crust—above an arbitrary depth, such as ten miles—is well known. Oxygen is the most abundant element, whether by weight or by number of atoms. Silicon is next and then aluminum, iron, magnesium, calcium, sodium and potassium. These eight elements account for 98 per cent of the whole mass.—Russell, Henry N.: The Cosmical Abundance of the Elements, *Nature*, Nov. 29, 1941.

Clinical Notes, Suggestions and New Instruments

ABERRANT PANCREATIC TISSUE WITH HYPERINSULINISM

FREDERICK GOETHE SMITH, M.D., MARION, OHIO

Aberrant pancreatic tissue was first observed by Klob in 1859. Faust and Mudgett [1] have recently reviewed the reported cases and added 1 of their own, bringing the total to 370. Apparently, through some error in embryologic development, pancreatic tissue may develop in various ectopic sites separate from the normal pancreatic anlage. It has been found most frequently in the stomach, duodenum and jejunum, fairly often in the ileum and Meckel's diverticulum and rarely in the gallbladder, omentum and mesentery.

Seldom of clinical importance, the gland tissue is usually an incidental finding at surgical intervention or autopsy. It may, however, be the site of inflammation and ulceration necessitating surgical removal, and in the ileum the condition has been responsible for intussusception. Roentgenologically it may produce a filling defect simulating a polyp or a malignant growth. The case to be reported is of interest in exhibiting definite symptoms of hyperinsulinism which were relieved by the surgical removal from the wall of the duodenum of a nodule of aberrant pancreatic tissue.

History.—Mrs. E. R., white, a housewife aged 45, was first seen Jan. 16, 1940. Her family history was irrelevant. She had had the usual children's diseases and at 30 years had scarlet fever and rheumatism and was confined to bed for the better part of a year. She was subject to urticaria produced by eating asparagus. At 27 her appendix was removed and at 29 a tonsillectomy was done.

The patient had not been well for twelve or fifteen years. She had been treated by many different physicians for a variety of complaints including sinus infection, "dropped stomach," sick headaches, cystitis, nervousness and "menopause." In 1935 examination revealed a slightly enlarged right kidney pelvis and mild secondary anemia; the anemia responded well to Blaud's mass and diet. Since then she received a great deal of theelin, liver extract and vitamins. Five months previous to my first examination she was given high voltage roentgen therapy over the pelvis for a persistent menorrhagia, which resulted in complete cessation of the menses.

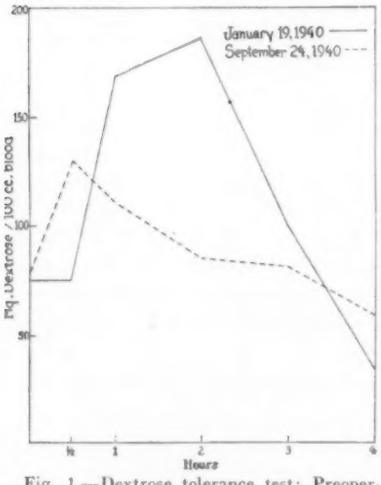


Fig. 1.—Dextrose tolerance test: Preoperative and postoperative response of the blood sugar to the ingestion of 75 Gm. of dextrose.

At the time of her examination her chief complaint was weakness, which was so pronounced that she was unable to remain out of bed for more than a couple of hours at a time. If she stayed up a little too long she would tremble all over and become breathless. Sometimes she would feel faint, but she never lost consciousness and never had a convulsion. Her appetite was good and she occasionally ate between meals; sometimes she would awaken at night and eat. The only complaint of pain was a dull aching in the right flank posteriorly a little lateral to the costovertebral angle. There was some frequency and nocturia, and once or twice she thought that there was a little blood in her urine.

1. Faust, D. B., and Mudgett, C. S.: Aberrant Pancreas, with Review of the Literature and Report of Case, Ann. Int. Med. **14**: 717-728 (Oct.) 1940.

Physical Examination.—The patient was rather poorly nourished, of asthenic habitus, subject to storms of emotional instability and depression but on the whole sincere and cooperative. She was 63¾ inches (162 cm.) tall and weighed 106½ pounds (48.3 Kg.). General physical examination did not reveal anything of importance.

Cystoscopy and retrograde pyelography demonstrated a mild trigonitis and a slightly enlarged right kidney pelvis with a descent of 2.5 cm. of the right kidney in the upright position. Comparison with roentgenograms made elsewhere in 1935 did not reveal any change.

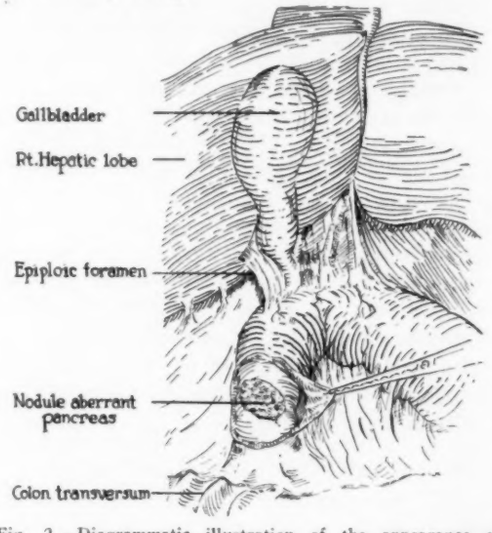


Fig. 2.—Diagrammatic illustration of the appearance of nodule of pancreatic tissue on the descending portion of the duodenum as seen at operation.

Fluoroscopy of the chest did not reveal any abnormality; barium meal showed normal filling and function of the gastrointestinal tract. Abnormality of the duodenum was not observed. A barium enema showed normal filling of the large bowel. Intravenous cholecystography demonstrated a normally functioning gallbladder.

Laboratory examination of the blood, urine, serum Wassermann and gastric contents was essentially normal. The basal metabolic rate was —13. The electrocardiogram was normal and the dimensions of the sella turcica were normal.

A dextrose tolerance test was made employing 75 Gm. of dextrose orally; the blood sugar rose in two hours from a fasting level of 77 mg. to 181 mg. and then fell sharply to 37 mg. at the end of four hours. At this time the patient was extremely weak, perspired freely and trembled. She asked for something to eat and was given a slice of toast, with relief of symptoms.

The patient was observed over a period of several weeks; frequent carbohydrate feedings were necessary to relieve the symptoms of weakness. An attempt was made to give all the carbohydrate in slowly assimilated starches and to feed principally fats and proteins, but this was only partially successful because of the patient's craving for sweets. Numerous blood sugar determinations were made, usually two or three hours after meals, with a finding of consistently low levels, ranging from 61 to 77 mg. per hundred cubic centimeters of blood. The only measure that afforded any significant relief from the extreme weakness was the frequent administration of food, and at one time she was taking as many as eleven meals in twenty-four hours. On the basis of the hypoglycemia, without demonstrable extrapancreatic cause, surgical exploration of the pancreas for a possible adenoma was advised.

On March 4 the patient was subjected to laparotomy. The abdominal and pelvic viscera were normal to palpation. The pancreas was exposed and its substance carefully palpated but nothing abnormal was found. It was then noted that on the descending portion of the duodenum just below the superior duodenal flexure there was a nodule under the serosa which resembled pancreatic tissue. The peritoneum was incised over this nodule and it was carefully dissected free, exposing the

pouting outer surface of the still intact duodenal mucosa. All bleeding points were carefully ligated and the defect was closed with a double row of Lembert sutures. The abdominal wall was closed in layers in the usual manner.

The postoperative course was uneventful and the patient was discharged to her home on the twelfth postoperative day. Her progress to date has been satisfactory. The weakness of which she formerly complained is much relieved, she has gained 20 pounds (9 Kg.) and she no longer requires frequent feedings. Her dextrose tolerance curve appears to have been somewhat altered, no longer reaching such high early levels but nevertheless dropping to 62 mg. at four hours (fig. 1). The readings are given in the accompanying table.

Dextrose Tolerance Test: Response of the Blood Sugar to the Ingestion of 75 Gm. of Dextrose

	Blood Sugar, Mg. per 100 Cc. of Blood		
	Preoperative		Postoperative
Time	1/19/40	2/28/40	9/24/40
Fasting	77	100	79
30 minutes	77	178	129
1 hour	166	210	111
2 hours	181	171	85
3 hours	100	85	82
4 hours	37 *	69	62

* Accompanied by symptoms of insulin shock.

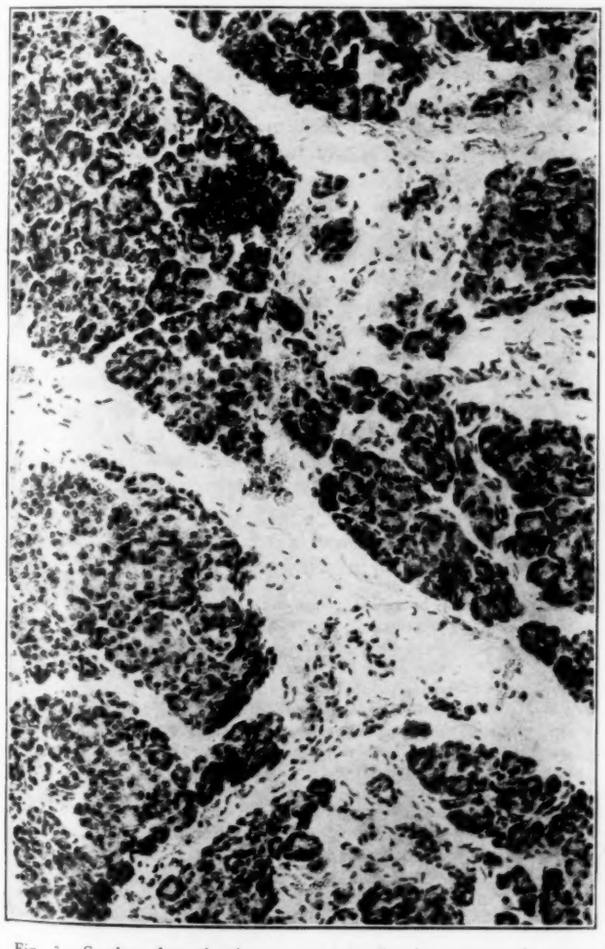


Fig. 3.—Section through aberrant nodule showing apparently normal acinous tissue separated by broad strands of fibrous connective tissue (hematoxylin and eosin stain; reduced from a photomicrograph with a magnification of 120 diameters).

Pathologic Examination.—The tissue removed consisted of a small oval flattened piece of yellowish white tissue with the gross lobular markings of pancreas. It measured approximately 2 by 1.5 by 0.5 cm. and weighed 1.5 Gm. Grossly the cut surface was yellowish white and lobulated and appeared to be normal pancreatic tissue. Microscopic examination showed pancreatic tissue consisting of acini and ducts, with a few well circumscribed islets and numerous diffuse groups of islet cells (figs. 3 and 4).[2]

COMMENT

Certainly one must be careful in the evaluation of clinical observations of this sort. The removal of so small a quantity

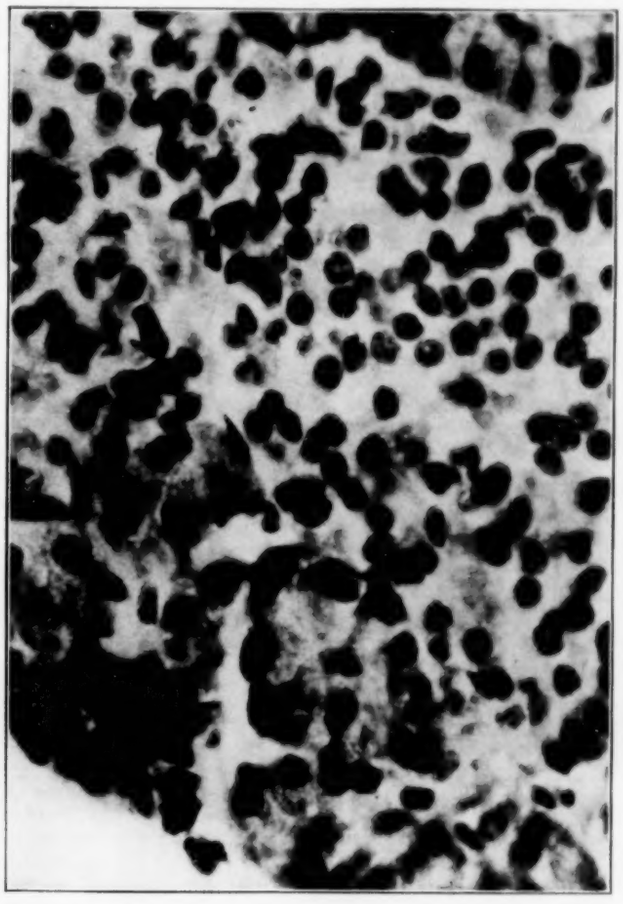


Fig. 4.—High magnification of the aberrant pancreatic tissue, showing diffusely scattered areas of island cells between the acini (hematoxylin and eosin stain; reduced from a photomicrograph with a magnification of 480 diameters).

as 1.5 Gm. of pancreatic tissue, provided it is normal, seems scarcely sufficient to affect seriously the carbohydrate metabolism. Although in this case the number of well formed islands was not increased, we could observe a diffuse amount of island cells between the acinous tissue. They were not very conspicuous or abundant and did not resemble island adenomas. Their significance in the production of the clinical symptoms cannot be estimated. Fanta [3] reported similar observations made on a man aged 37 who suffered from symptoms of hypoglycemia together with hyperchlorhydria. There was in his case a walnut size nodule of aberrant pancreatic tissue on the duodenum. The patient improved following removal of the aberrant tissue but still was subject to some symptoms of hypoglycemia. As remarked by Fanta, aberrant pancreatic tissue does not have the same significance as an islet adenoma. Nevertheless, any patient with hyperinsulinism who fails to exhibit an adenoma of the pancreas at surgical exploration should be carefully examined for the presence of aberrant pancreatic tissue.

SUMMARY

Surgical removal of aberrant pancreatic tissue from the wall of the duodenum produced relief of symptoms of hyperinsulinism.

240 East Church Street.

2. Dr. Emmerich von Haam of the department of pathology, Ohio State University College of Medicine, Columbus, examined the microscopic preparations and made the photomicrographs.

3. Fanta, E.: Hypoglykämie bei Superazidität und Nebenpankreas, Endokrinologie **19**: 34-38, 1937.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

CRURICAST BANDAGE ACCEPTABLE

Manufacturer: E. K. Demmel Company, 59-11-67th Avenue, Ridgewood, Brooklyn.

Cruricast Bandages are gauze bandages impregnated with a zinc gelatin paste, prepared in the form of a moist roller bandage of a 10 yard standard length, wrapped in two sheets of waxed paper and packed individually or in dozen sealed containers.

The zinc paste used for the impregnation of the bandages has a low melting point and the formula is slightly varied for winter or for summer use to suit changes in climatic conditions. Made in 3 inch and 4 inch widths, the bandages have the white color of a zinc ointment. A dressing of gauze or stockinet should be applied over a cast made from a Cruricast Bandage to protect clothing.

Cruricast Bandages provide a compressive and supportive dressing which is soft and resilient. This dressing is porous to allow perspiration and evaporation and is of sufficient strength to prevent expansion from pressure of body heat. Data submitted by a reliable testing laboratory certifies to the strength of a three-ply cast made from a Cruricast Bandage.

Cruricast Bandage.

The average breaking load was warp 71.3 pounds and filling 42.3 pounds. The breaking load test was made by the "grab method." A sample was broken in the piece. Back jaws 2 inches wide, front jaws 1 inch wide, distance between jaws 1 inch, speed of pulling jaw 12 inches per minute. Capacity of machine 0-110 pounds. A sample was conditioned for four hours in an atmosphere of 71 F. temperature and 65 per cent relative humidity before testing.

The bandages may be put directly on the skin or on ulcerated areas. The outer layers dry slowly; the layers next to the skin remain fairly moist, thereby retaining the medication in ointment form and prolonging the effect of the active ingredients. There is approximately 53 mg. of calcium chloride in each gram of bandage made up according to the summer formula and about 75 mg. of calcium chloride in each gram of bandage made up according to the winter formula. In the interest of national defense, the amount of zinc oxide in the formula has been reduced and kaolin has been substituted.

Cruricast Bandages will not dry as quickly as an Unna's boot prepared according to the National Formulary. Drying can be hastened by powdering with talcum or spraying with a solution of 1.5 per cent formaldehyde in water. A sprayer for this purpose is available. When formaldehyde is used, ulcerated areas and open wounds should be well covered to prevent contact with the solution.

The therapeutic action and effect of Cruricast Bandages are similar to those of an Unna's paste dressing. However, Cruricast Bandages do not require heating and their application is more simple for office use.

In the Council examination the Cruricast Bandages were used on ambulatory patients who attended the surgical clinic at a large hospital. The application of the bandages was found to be quite easy and they formed a soft elastic and flexible support. Compared with other bandages of this type on the market the Cruricast Bandage does not dry readily and, according to patients who have worn other types of zinc-gelatin bandages, they moisten the stockings more easily. It is for this purpose that a spray of 1.5 per cent formaldehyde is advocated, which complicates the procedure. Since the addition of kaolin the bandage has been somewhat drier.

The Council voted to accept the Cruricast Bandage for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

IN JUNE 1941 THERE APPEARED IN THE NEW YORK STATE JOURNAL OF MEDICINE A COMMUNICATION ON THE USE OF A PREPARATION KNOWN AS COLI METABOLIN IN THE TREATMENT OF HAY FEVER. THE CONTENTS OF THIS ARTICLE WERE REFERRED TO SO OPTIMISTICALLY IN TIME MAGAZINE AND A NEWS COLUMN ON HEALTH THAT MANY INQUIRIES FROM THE PUBLIC AND THE MEDICAL PROFESSION HAVE BEEN RECEIVED AT THE COUNCIL OFFICE. THESE INQUIRIES INDICATE THAT A WIDESPREAD IMPRESSION HAS BEEN CREATED THAT THIS AGENT MUST BE OF DECIDED VALUE TO HAVE RECEIVED SO MUCH PUBLICITY. WHILE COLI METABOLIN (TOSSE) HAS NOT BEEN PRESENTED FOR COUNCIL CONSIDERATION, IT WAS NEVERTHELESS DEEMED ESSENTIAL IN THE INTEREST OF RATIONAL THERAPEUTICS FOR THE COUNCIL TO PUBLISH THE FOLLOWING REPORT.

AUSTIN E. SMITH, M.D., Acting Secretary.

COLI METABOLIN (TOSSE) NOT ACCEPTABLE FOR N. N. R.

A recent report[1] in the *New York State Journal of Medicine* presented an optimistic picture for hay fever sufferers by implying that an agent known as Coli Metabolin had been found to effect cures in a high percentage of cases. Shortly after this article appeared, its context was reproduced in *Time* magazine[2] and in a news column on health by Dr. Logan Clendening with the inviting captions "Last Sniffle?" and "New Hay Fever Remedy Tested Successfully." Immediately members of the medical profession began to receive inquiries from the public. Obviously the publicity afforded through the press had not passed unnoticed.

The author of the paper which appeared in the *New York State Journal of Medicine* was Dr. Ernest J. Elsbach, a physician who received his medical training, according to available records, in Europe and who was granted a license in 1938 to practice medicine in New York State. According to Dr. Elsbach, Coli Metabolin (Tosse) has been successfully used in the treatment of "hay fever," "allergic asthma" and "allergic eczema." The Elsbach paper is short, consisting of only about one and a half pages; yet half of this brief report is devoted to a general discussion of allergic rhinitis. The remainder of the paper contains what is presumed to be a description of the agent and the results following its use; but the latter aspect received little detailed attention, considering the optimistic tone of the article. Noticeably absent is any mention of the use of controls or statistical analysis. The number of patients treated was 75, but no details can be found in this paper on any untoward reactions or on the criteria on which the claim of a "cure" was based.

The following statements regarding Coli Metabolin appear in an advertising circular issued by the Tosse Laboratories:

". . . a new biological treatment . . . which appears to act to a high degree as a stimulant to the natural functions of the sympathetic system. It consists of the metabolin of the coli bacteria, grown on specific culture media. The action of this natural metabolic product is by no means a non-specific protoplasm activation, because its effect is the same, even when the preparation is de-proteinized by heating. Its action on the sympathetic nervous system seems to be very pronounced and have a desensitizing effect. The best causal therapy is, of course, that of giving the appropriate remedy, after an exact diagnosis has been made, or of approaching the nervous system itself and bringing it into such a condition that it no longer reacts to any irritant. Many investigations and experiments have disclosed that in every infectious disorder of the body, the curative effect is exerted through influence of the nervous system on the endothelial system. The principal remedies, intended to stimulate this system to resist infection, are autohemotherapy, protein bodies of various kinds and other albuminous substances."

These statements, together with others of a similar indefinite speculative tenor, may serve to impress the more susceptible reader but will not be regarded by critical investigators as offering much information on the exact nature of the preparation or its specific mode of action. Final instructions in the circular read "During treatment, the patient should not

1. Elsbach, Ernest J.: A New Treatment for Hay Fever, New York State J. Med. **41**: 1248 (June 15) 1941.
2. Last Sniffle? Time, June 30, 1941, p. 48.

change his place of residence, and, while no special diet is required, raw strawberries should be avoided. Abstinence from alcohol is essential."

Even the most casual reader will not fail to notice a similarity between certain statements appearing in the Elsbach article and in the advertising circular. In fact, direct quotations may be noted in several instances. Neither source, however, suggests what the exact ingredients of Coli Metabolin may be, except to refer to them as "metabolins." According to definitions in current dictionaries, metabolin can be considered as a rather broad term to designate any product of metabolism. It is obviously a term with "elastic" possibilities.

Of the letters arriving at the Council office, not all have been inquiries; some have been complaints. One physician wrote to tell of a telephone call from a woman suffering from chronic asthma who wrote to Dr. Elsbach to inquire about the treatment; the letter received in the Council office states that this woman was informed that "it would be necessary for her to come to New York and his charge for testing and administering this product would be $220 (cash)." Another physician, not a resident of New York State, wrote saying he was informed that the cost of purchasing the material (presumably a package containing 12 ampuls of 2 cc. each) was $22. A third physician, a resident of Chicago, inquired of Dr. Elsbach as to the cost of treatments and the possibility of success; Dr. Elsbach replied "I am absolutely not inclined to promise anything."

A number of physicians have forwarded to the Council office copies of the advertising circular. One physician in Chicago mailed a specimen of the package container with 2 ampuls of Coli Metabolin and a package insert. Imprinted on the glass ampuls is E. Tosse & Co., Inc., 2 cc. Plus, Coli Metabolin For Intramuscular Injection. Made in U. S. A. Control 15C81.

The insert advocates the use of Coli Metabolin (Tosse) in the treatment of "hay-fever and allergic asthma" and states that the product is "a solution of the products of the metabolic processes of E. coli. Their metabolism is influenced and controlled by the enrichment of their culture medium by the use of ascitic fluid and sugars, and by the differential procedures in their culture. The final product is a solution of the filtrable and soluble solution. The final product is a sterile mobile liquid, containing no coli organisms." Under a section entitled Indications and Administration there appears the statement "Although no definite statement can at present be made as to the etiology of vasomotor rhinitis and related allergenic manifestations, the use of Coli Metabolin Tosse is predicated upon the belief that allergic manifestations may be neurogenic entities, intimately bound up with the physiology of the sympathetic nervous system."

Stamped on the circulars and inserts is the statement to the effect that Coli Metabolin is available in New York State only, as it is not sold in interstate commerce. It is the understanding of the Council that in May 1937 E. Tosse and Company, Inc., informed the Division of Biologics Control, National Institute of Health, that it had "acquired the manufacturing rights for the preparation of 'Antigens of Coli Bacteria'" and inquired with respect to the requirements for a license for the product and in 1941 submitted formal application for license. License has not been granted because the firm "failed to present evidence of the therapeutic or prophylactic value" of the product.

While E. Tosse and Company confines its claims for Coli Metabolin to its use in allergic conditions, it is interesting to note that in 1938 a German firm, Lecinwerk Dr. Ernst Laves, Hanover, Germany, applied for a license for "Coli-Antigen Laves." The latter firm was not granted a license either. The following summary of the claims made by the German concern has been supplied to the Council office:

"Reduction of 'red blood pressure' but not 'white blood pressure'; reduction of the rigidity in multiple sclerosis; relief of spasm in spastic constipation, spastic gall-bladder affections, singultus, meteorism, essential dysmenorrhea, disorders included under the term 'Hepatovegetopathy,' angina pectoris, hay fever; regulates the vegetative nervous system; a reciprocal action with the glands of internal secretion; bronchial asthma; vaso-motor cardiac weakness; spastic gall-bladder disorder."

A third product, known as Mutaflor, is also prepared from B. coli. A summary of the claims which are made in a circular prepared by the firm Hageda A. G., Berlin, was supplied to the Council office at the same time as the summary of the claims for Coli-Antigen Laves. The conditions for which Mutaflor was advocated are:

"(1) Chronic catarrh of a large intestine (colitis); (2) Digestive disturbances with abnormal putrefaction or fermentation processes (dyspepsia); (3) Ulcers of stomach and duodenum; (4) Chronic constipation (atonic and spastic); (5) Constant carriers of infectious germs; (6) Acute and chronic dysentery; (7) Diseases caused by intestinal poisons, localized in other organs, (a) cutaneous eruptions including urticaria and crusta lactea, (b) chronic diseases of the joints, (c) ischias, (d) pernicious anemia, (e) inflammation of kidney pelvis and bladder, (f) many cases of disturbances during menstruation and menopause, (g) migraine, (h) high blood pressure, (i) many cases of sleeplessness and heightened mental fatigue. Furthermore, Mutaflor may be of assistance without direct effect on the main disease in cardiac trouble with intestinal flatulence (stopping of attacks), and in the 'toxic intestinal catarrhs' of lung tuberculoses, etc."

These are indeed impressive claims for an article the exact nature and mode of action of which appears so vague.

No product of E. Tosse and Co., Inc., stands accepted by the Council for inclusion in New and Nonofficial Remedies. Recent advertising indicates that the firm markets a number of preparations bearing such noninformative names as Arsoplasma, Bismogenol, Ekzebrol, Kavalactol, Nitroscleran and Strophalen. Advertising material in the Council office reveals that in 1931 Bismogenol was a suspension of bismuth salicylate in oil for "the treatment of syphilis in all stages"; Nitroscleran was "sodium nitrate combined with inorganic (Trunezek) serum" for the "treatment of hypertension, incipient arteriosclerosis, coronary sclerosis, angina pectoris, intermittent claudication"; and Ekzebrol was a "combination of bromine and strontium in an isotonic sodium chloride solution" for the "treatment of all forms of eczema, urticaria, psoriasis, toxic erythema and all itching dermatoses, also nervous disorders, allergy, sympathicotonia, neurasthenia."

The Council office directed a letter to the firm asking for information on Coli Metabolin so inquiring physicians might receive as much information as was available. The letter was referred to Di Cyan and Brown, consulting chemists in Brooklyn, whose reply contained little information that could not be gathered from the advertising material for Coli Metabolin except for the pertinent statement "We have advised the firm of the advantages of submitting the product to the Council, and have been told that inasmuch as it is in the process of a patent application, they cannot do so at the present time, and not invalidate their patent rights through disclosure."

In considering a product for inclusion in New and Nonofficial Remedies, the Council requires a fully informative statement of composition so that the physician may know what he is prescribing. The Council also insists that the claims of manufacturers or agents concerning the therapeutic properties of their products must be compatible with demonstrable facts. For clinical evidence to be acceptable, it must offer sufficient objective data to enable the Council to confirm the facts and establish the scientific value of the conclusions drawn. The acceptance of evidence is determined mainly by its quality, and the evidence furnished must be in sufficient detail to permit judgment as to the care with which it was gathered and the validity of the deductions.

Obviously, present evidence indicates that Coli Metabolin (Tosse) is incompatible with the rules of the Council. Its composition may be said to be indefinite. Although the firm claims that the preparation has the same effect even when it is "deproteinized by heating," no indisputable evidence appears in its literature to support this statement.

The Council voted to declare Coli Metabolin (Tosse) unacceptable for inclusion in New and Nonofficial Remedies because (1) its composition is indefinite and semisecret; (2) the claims made are not supported by valid scientific evidence known to the Council or generally available.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 7, 1942

CLIMACTERIC IN AGING MEN

Recently many reports have appeared in medical journals claiming that a climacteric occurs in middle aged men.[1] Brochures circulated by pharmaceutic manufacturers depict the woful course of aging man. None too subtly these brochures recommend that male hormone substance, like a veritable elixir of youth, may prevent or compensate for the otherwise inevitable decline. What of the postulated occurrence of a climacteric in men? The facts allow a reasonable analysis.

Female mammals below primates do not pass through a menopause, since they do not menstruate. A thorough study has not been made of subhuman primates. In old female rodents the reproductive status is unlike that in elderly women, for the decline of ovarian function is gradual and a return of reproductive function can be induced on stimulation by exogenous gonadotropic substances.[2] Indeed in aged mice and rats, as contrasted with women after the menopause, the ovaries contain ova after reproductive cycles disappear, and the degree of ovarian atrophy is much less severe.[3] This dissimilarity between the rodent and the primate recalls a similar difference in the amount of retrogressive changes in the testes after hypophysectomy or cryptorchism, the primate (monkey) showing a much less degree of spermatogenesis than the rat.[4]

Available data allow examination of the essential nature of the menopause only as it occurs in women. The primary phenomenon is ovarian failure, the ovary becoming atrophic and containing only a reduced number of ova.[5] In late years ova disappear entirely. Decreased ovarian function, whether in the menopause or after bilateral ovariectomy, is followed by diminished secretion of estrogens and by an increase in the quantity of gonadotropins as measured in the urine.[6] Elevated titers of urinary gonadotropins are observed continuously into old age[7] and apparently are the result of hypersecretion by the pituitary.

Although the injection of exogenous gonadotropins has been claimed to reactivate the ovaries,[8] this has been denied.[3] Probably the ovaries of older women are at least less responsive than those of younger women.[8] This insensitivity to gonadotropins observed in older women recalls a similar phenomenon in immature animals.[10]

Vascular and psychoneurologic complications are common, the former occurring in two thirds of menopausal women.[11] Other complications that occur frequently are headache, giddiness and "rheumatic" pains.[11] The nature of vascular phenomena at the menopause has been examined recently by Reynolds and his co-workers[12] and by Scherf.[13]

If men pass through a comparable climacteric state there should be evident (1) testicular insufficiency with (2) a pronounced compensatory hyperexcretion of gonadotropins and (3) the occurrence of vasomotor and other phenomena similar to those seen in menopausal women. However, evidence of an abrupt, spontaneously occurring climacteric in normal men has not been produced. The data accumulating from many reports have not indicated an abrupt decrease in the excretion of urinary androgens by normal men prior to senility, even though somewhat smaller quantities are excreted in the later years.[14] Dingemanse, Bor-

1. Lamar, C. P.: Clinical Endocrinology of the Male with Especial Reference to the Male Climacteric, J. Florida M. A. **26**: 398 (Feb.) 1940. Dunn, C. W.: Male Hormone Therapy of the Male Climacteric and the Gonadal Insufficiency State, Delaware M. J. **11**: 76 (May) 1939. Werner, A. A.: The Male Climacteric, J. A. M. A. **112**: 1441 (April 15) 1939. Donald, H. R.: Observations on the Male Climacteric, Clin. J. **67**: 323 (Aug.) 1938. Galloway, David: The Male Climacteric, Malayan M. J. **8**: 129 (Sept.) 1933. Douglas.[19]

2. Zondek, Bernhard, and Aschheim, Selmar: Hypophysenvorderlappen und Ovarium, Arch. f. Gynäk. **130**: 1, 1927. Steinach, E.; Kun H., and Hohlweg, W.: Reactivierung der senilen Ovars und des weiblichen Gesamtorganismus auf hormonalen Wege, Arch. f. d. ges. Physiol. **219**: 325, 1928.

3. Waldeyer, L.: Zur Frage der Reactivierung von senilen menschlichen Ovarien, Zentralbl. f. Gynäk. **58**: 2882 (Dec. 8) 1934.

4. Smith, P. E.: Comparative Effects of Hypophysectomy and Therapy on the Testes of Monkeys and Rats, in Les hormones sexuelles, edited by L. Brouha **3**: 201, 1938.

5. Allen, Edgar: Female Reproductive System, chapter 14 in Problems of Aging, edited by E. V. Cowdry, Baltimore, Williams & Wilkins Company, 1939. Kurzrok and Smith.[9]

6. Fluhmann, C. F.: Interrelationship of Anterior Hypophysis and Ovaries: Review of Recent Literature, Am. J. Obst. & Gynec. **18**: 738 (Nov.) 1929; Anterior Pituitary Hormone in the Blood of Women with Ovarian Deficiency, J. A. M. A. **93**: 672 (Aug. 31) 1929. Zondek, Bernhard: Ueber die Hormone des Hypophysenvorderlappens, Klin. Wchnschr. **9**: 393 (March 1) 1930.

7. Österreicher, Walther: Vermehrte Ausscheidung von Hypophysenvorderlappenhormon (Prolan) im Harne in der Involutionsperiode bzw. im Senium, Klin. Wchnschr. **11**: 813 (May 7) 1933. Hamburger.[20]

8. Westman, Axel: Reactivierung von senilen menschlichen Ovarien, Zentralbl. f. Gynäk. **58**: 1090 (May 12) 1934.

9. Kurzrok, Raphael, and Smith, P. E.: The Menopause, in The Pituitary Gland, Baltimore, William Wood & Co., 1938, p. 340.

10. Engle, E. T.: The Relation of the Anterior Pituitary Gland to Problems of Puberty and of Menstruation, in The Pituitary Gland, Baltimore, William Wood & Co., 1938, p. 298.

11. An Investigation of the Menopause in One Thousand Women, Committee Report, Lancet **1**: 106 (Jan. 14) 1933.

12. Reynolds, S. R. N.; Kaminester, Sanford; Foster, Frances L. and Schloss, Stewart: Psychogenic and Somatogenic Factors in the Flushes of the Surgical Menopause, Am. J. Obst. & Gynec. **41**: 1022 (June) 1941; Dermovascular Effects of Estrogen in Women with Menopausal Flushes, Surg., Gynec. & Obst. **73**: 206 (Aug.) 1941.

13. Scherf, David: Respiratory and Circulatory System in Females with Ovarian Dysfunction, Ann. Int. Med. **13**: 1414 (Feb.) 1940.

14. Funk, Casimir; Harrow, B., and Lejwa, A.: The Male Hormone: II, Proc. Soc. Exper. Biol. & Med. **26**: 569 (April) 1929. Kochakian, C. D.: Excretion of Male Hormones: I, Endocrinology **21**: 60 (Jan.) 1937.

chardt and Laquer [15] report an average excretion per liter of 19 international units in men 59 to 67 years of age in contrast with the 40 to 50 international units per liter in men 20 to 34 years of age. Fraser and his co-workers [16] found values with colorimetric assay to be 1.8 to 4.8 mg. in men 71 to 75 years of age, a sharp contrast to the average of 13.8 mg. in young male adults. Dingemanse and her collaborators report, however, the excretion of 35 and 50 international units by two men 80 years of age, which emphasizes the point that no sudden gonadal dysfunction comparable to that in women is known to occur at any set age range.

The continued excretion of androgens cannot be explained by substitution of secretions from the adrenal or other sources, for on removal of the testes the quantities of urinary androgen rapidly diminish.[17]

Neither is there known to be any sudden or material elevation in the quantities of urinary gonadotropins excreted by aging men such as in women after the menopause.[18] This fact is relevant to an understanding of testicular secretion in older men. Although hypersecretion of gonadotropins occurs in actual instances of primary testicular insufficiency, the excretion of urinary gonadotropins apparently does not rise in aging men as might be expected as a result of claimed decrease in testicular secretion. The inference might be drawn that the production of gonadotropins by the pituitary becomes less in some men during later years. If so, the reduced testicular function would be secondary.

The occurrence of vasomotor phenomena comparable to those in menopausal women are apparently infrequent despite claims that men in the fourth and fifth decades exhibit such vascular changes along with a number of specific and nonspecific complaints.[19]

Primary testicular insufficiency results in a climacteric-like state. In men, as in women, a "climacteric state" obtains when there is a primary gonadal insufficiency with decrease in gonadal secretions and increase in the quantities of urinary gonadotropins.[20] The titers of urinary gonadotropins are comparable to those in menopausal women and, in some castrate men, are in the higher portion of the range found in ovariectomized women.[21] Two of three men castrated prepuberally and now in their sixth decade have been observed each to excrete 160 mouse units.[22] Apparently hyperproduction of gonadotropins has continued for the almost half century these men have lived since castration. A climacteric state does not occur, however, either in women [23] or in men [22] when the gonadal insufficiency is secondary to hypofunction of the pituitary.

In the castrate man vasomotor phenomena are severe in many instances and appear with the intensity seen in ovariectomized women. In some castrates palpitation, dyspnea on effort and other phenomena observed in certain menopausal women occur.[18] Charts show the frequency of hot flushes and sweating in a castrate man and their temporary control during treatment with testosterone propionate. This significance of psychogenic factors is suggested by the lessened effectiveness of endocrine therapy during periods when the patients are especially apprehensive and disturbed.

Although the prerequisite for a climacteric-like state in men, namely a primary testicular insufficiency with evidence of a compensatory hypersecretion of gonadotropins, is seldom fulfilled spontaneously, a few instances might be observed, such perhaps as those reported by Heller and his associates [24] as "involutional" cases (age not stated) in which large quantities of urinary gonadotropins were excreted. Possibly bilaterally cryptorchid men might exhibit climacteric-like phenomena, for experimentation in several species of animals shows that long-continued cryptorchism results in the secretion of subnormal amounts of male hormone substance. Hess, Kunstadter and Saphir [25] have stated that urinary gonadotropins are present in supranormal quantities in bilaterally cryptorchid boys.

Cases of primary testicular insufficiency are observed only infrequently as in severe orchitis, traumatic castration and surgical castration, as for medicolegal purposes or incidental to management of such matters as hernias, hydroceles and tumors.

15. Dingemanse, Elizabeth; Borchardt, Helene, and Laquer, Ernst: Capon Comb Growth Promoting Substances ("Male Hormones") in Human Urine of Males and Females of Varying Ages, Biochem. J. **31:** 500 (April) 1937.

16. Fraser, R. W.; Forbes, Anne P.; Albright, Fuller; Sulkowitch, Hirsch, and Reifenstein, E. C., Jr.: Colorimetric Assay of 17-Ketosteroids in Urine: A Survey of the Use of This Test in Endocrine Investigation, Diagnosis and therapy, J. Clin. Endocrinol. **1:** 234 (March) 1941.

17. Kenyon, A. T.; Gallagher, T. F.; Peterson, D. H.; Dorfman, R. I., and Koch, F. C.: The Urinary Excretion of Androgenic and Estrogenic Substances in Certain Endocrine States: Studies in Hypogonadism, Gynecomastia and Virilism, J. Clin. Investigation **16:** 705 (Sept.) 1937. Kenyon, A. T.; Sandiford, Irene; Bryan, A. H.; Knowlton, Kathryn, and Koch, F. C.: The Effect of Testosterone Propionate on Nitrogen, Electrolyte, Water and Energy Metabolism in Eunuchoidism, Endocrinology **23:** 135 (Aug.) 1938. Kenyon, A. T.; Knowlton, Kathyrn; Sandiford, Irene; Koch, F. C., and Lotwin, Gertrude: A Comparative Study of the Metabolic Effects of Testosterone Propionate in Normal Men and Women and in Eunuchoidism, ibid. **26:** 26 (Jan.) 1940. Callow, N. H.; Callow, R. K., and Emmens, C. W.: 17-Ketosteroid, Androgen and Estrogen Excretion in the Urine of Cases of Gonadal or Adrenal Cortical Deficiency, J. Endocrinol. **2:** 88 (May) 1940. McCullagh, E. P.: Treatment of Testicular Deficiency with Testosterone Propionate, J. A. M. A. **112:** 1037 (March 18) 1939. The subject is reviewed by Hamilton, Dorfman and Hubert in an article to be published.

18. Saethre, Haakon: Quantitative Bestimmungen der Ausscheidung von Prolan bei Geschlechtsreifen und bei greisen Männern, Klin. Wchnschr. **14:** 376 (March 16) 1935. Heller, Heller and Severinghaus.[24] Hamilton and Catchpole.[22]

19. Douglas, R. J.: The Male Climacteric: Its Diagnosis and Treatment, J. Urol. **45:** 404 (March) 1941.

20. Hamburger, Christian: Studies on Gonadotropic Hormones from Hypophysis and Chorionic Tissue with Special Reference to Their Differences, Acta path. et microbiol. Scandinav., supp. 17, p. 1, 1933. Catchpole, Hamilton and Hubert.[23]

21. Catchpole, H. R.; Hamilton, J. B., and Hubert, G.: Unpublished data.

22. Hamilton, J. B., and Catchpole, H. R.: Unpublished data.

23. Albright, Fuller: Studies on Ovarian Dysfunction: III. The Menopause, Endocrinology **20:** 24 (Jan.) 1936.

24. Heller, Emily J.; Heller, Carl G., and Severinghaus, Elmer L.: Gonadotropic Hormone: Assays of Human Male Urine, Endocrinology **29:** 1 (July) 1941.

25. Hess, J. H.; Kunstadter, R. H., and Saphir, William: Urinary Excretion of Gonadotropic Hormone in Cryptorchism, J. A. M. A. **108:** 352 (Jan. 30) 1937.

Androgens exert a tonic and stimulating action, associated perhaps with their metabolic effects.[26] Male hormones provide replacement therapy in castrates but are active also in normal middle aged men beset by aging processes which are in some large proportion irrespective of testicular function. Androgens may influence quite harmfully the physiologic and psychologic condition of previously well adjusted elderly men, as has been observed incidental to the trial use of male hormone substances in the treatment of benign hypertrophy of the prostate. Actual evaluation of androgenic treatment cannot be avoided by glib explanation that men normally undergo a spontaneous climacteric, an abruptly occurring state of primary testicular insufficiency in which male hormones act as substitutional therapy. Primary gonadal insufficiency in men induces "climacteric phenomena" quite comparable to those in menopausal women. In normal men, however, a sudden, spontaneous onset of primary testicular insufficiency is observed only infrequently, lacking any evidence of rapid decrease in the production of gonadal hormones and compensatory increase in urinary gonadotropic substances, such as are characteristic of the menopause.

EPIDEMIC VIRUS CONJUNCTIVITIS

During the summer of 1941, according to Holmes,[1] a rapidly spreading type of acute conjunctivitis raged in Oahu, Hawaii. At first, patients and doctors called it "pink eye." However, when repeated cultures and smears were made from conjunctival scrapings and secretions from more than 50 cases, investigators found it impossible to determine any offending organism. In October a considerable number of cases began to appear in California, and the peak of the outbreak was reached in December. At that time authorities noted that 2 per cent of workers in some ship building plants were affected, but the percentage of those affected was higher in special groups, such as welders, whose eyes are notoriously subjected to the trauma of light.

After an incubation period of from two to five days the patients experience pain, excessive lacrimation and the feeling that some granular dusty body or some other foreign substance is in the eye. There is extensive edema, but a purulent discharge is seldom seen. The upper lids are usually reddened and swollen, and blepharospasm is encountered. In many instances ophthalmologists report that the palpebral conjunctivas are intensely reddened, edematous and congested; some have noted also that the bulbar conjunctivas are similarly affected. In Hawaii a characteristic and almost pathognomonic observation was the appearance of multiple subconjunctival hemorrhages on the tarsal portions of the conjunctivas.

In most instances the disease seemed to be self limited. It pursues a leisurely clinical course, in the absence of complications, lasting from two to three weeks. When corneal infiltrates developed, the eyes remained irritated for from four to six weeks or longer. Among the complications were infiltrates of the cornea, which appeared as grayish dots. With the aid of the slit lamp, minute deposits were seen forming a faint haze on the basal layers of the corneal epithelium. In some instances, when secondary infections occurred there was hemorrhagic conjunctivitis, and in a few cases there were ulcers of the cornea.

Thus far attempts to determine the cause of this conjunctivitis have been unavailing, but practically all the observers believe that a specific virus is responsible. In California the health department reports that inoculation of the scrapings into mice, guinea pigs, rabbits and monkeys gave negative results. Also attempts to make aerobic and anaerobic cultures yielded nothing. Studies are being continued in several laboratories with a view to isolating a virus or developing more information concerning the nature of the infection.

As is usual, the person who became infected was inclined to claim as the cause the last activity in which he engaged. The worker at an emery wheel was certain that a piece of the wheel struck his eye, the worker in the pineapple canneries stated that pineapple juice in the eye was responsible, swimmers said that the infection was due to swimming in contaminated water, and welders felt that the disease was directly due to the welding process.

The prevention of this, as of other infections concerning the eye, is definitely related to the prevention of contamination by soiled hands and linens. In industrial plants, medical control of the industrial worker is necessary.

The condition as it occurred in California seemed to be much less virulent and to have a lower grade transmission rate than that in Hawaii. Thus far all methods of specific treatment have been unavailing. Physicians in Hawaii and in California tried the mild silver preparations, various arsenic preparations, zinc, silver nitrate and alum with the observation that some of these methods of treatment seemed to aggravate the condition rather than to produce benefit. Most comforting was the application of cold compresses. Incidentally, the application of infra-red and other rays, both generally and locally, and the use of sulfonamide derivatives were also unavailing. The complications affecting the eye were treated by the usual technic of dilation and the use of iodine preparations for hastening the absorption of corneal infiltrates.

26. Thorn, G. W., and Harrop, G. A.: The "Sodium Retaining Effect" of the Sex Hormones, Science **86**: 40 (July 9) 1937. McCullagh, E. P., and Rossmiller, H. R.: Methyl Testosterone, J. Clin. Endocrinol. **1**: 503 (June) 1941. Kenyon and others,[17] 1938 and 1940.

1. Holmes, W. John: Epidemic Infections Conjunctivitis, Hawaii M. J. **1**: 11 (Nov.) 1941.

Current Comment

NEW INSECT VECTORS FOR BUBONIC PLAGUE

Isolation of virulent plague bacilli from avian fleas has been reported by Wheeler, Douglas and Evans [1] of the Hooper Foundation, San Francisco. Thirty years ago Rucker [2] suggested that predatory birds may play a role in the spread of bubonic plague. The suggestion, however, was not supported by experimental evidence. Within the last few years, confirmatory evidence has been reported by Jellison,[3] who demonstrated that rodent fleas are frequently transported by predatory birds to their nests on freshly killed rodents. From none of the transported fleas, however, was he able to recover the plague bacillus. An opportunity to test the Rucker theory was afforded by a recent local outbreak of plague among the ground squirrels in central California. Two months after the peak of the epizootic a burrowing owl was captured about 5 miles outside the infected area. This owl was the carrier of numerous "sticktight" fleas, an avian species (Echidnophaga gallinacea), found abundantly on hawks, owls, chickens and other domestic fowls and often present on rodents and coyotes. A mass inoculation of these avian fleas into a guinea pig proved that they were the carriers of virulent plague bacilli. This is apparently the first definite proof of avian transmission of plague infected insects. As far as known the birds themselves are not susceptible to the plague bacillus. The association of burrowing owls with colonies of ground squirrels, however, is epidemiologically interesting.

PREMATURE ENTHUSIASM ABOUT COLI METABOLIN (TOSSE)

Elsewhere in THE JOURNAL [1] appears a report by the Council on Pharmacy and Chemistry on a preparation known as Coli Metabolin (Tosse), which is advocated for the treatment of hay fever and allergic asthma. This preparation has been the subject of numerous inquiries received at the headquarters of the American Medical Association. The majority of the inquiries appear to have arisen as a result of articles in lay publications based on a short communication by Dr. Ernest J. Elsbach published in the *New York State Journal of Medicine*. From the Council report it may be inferred that critical investigators will consider the Elsbach article premature and unscientific, since little evidence is presented to justify the enthusiastic attitude of the author. According to the Council, the composition and exact mode of action of Coli Metabolin (Tosse) are indefinite and the claims of the firm are not supported by available valid scientific evidence. Thus, Coli Metabolin (Tosse) has been declared unacceptable for inclusion in New and Nonofficial Remedies. In order to be eligible for interstate commerce, biologic products and certain other therapeutic agents such as the arsphenamines must be licensed following consideration by the Division of Biologics Control of the National Institute of Health of the U. S. Public Health Service. The latter agency had refused to grant a license to the Tosse Laboratories permitting shipment of Coli Metabolin in interstate commerce. Nevertheless the product received some distribution, presumably under the pretext that it was intended for "investigational use only." It is entirely proper that laws regulating the movement of drugs in interstate commerce should provide exceptions for articles intended for legitimate research. Nevertheless, such exceptions are obviously open to serious abuse. The federal authorities have the particularly grave responsibility of making certain that the public is protected from those who choose this loophole as an outlet for drugs that have not established that right to a place on the American market. Any one with knowledge of the commercial distribution of such drugs will do well to inform the proper legal authorities.

1. Wheeler, C. M.; Douglas, J. R., and Evans, F. C.: Science **94:** 560 (Dec. 12) 1941.
2. Rucker, W. C.: Pub. Health Rep. **24:** 1225, 1909.
3. Jellison, W. L.: Pub. Health Rep. **54:** 792 (May 12) 1939.
1. Coli Metabolin (Tosse) Not Acceptable for N. N. R., this issue, p. 456.

THE PIGMENT OF THE MALARIA PARASITE

As the malaria parasite develops inside the red blood cells, the hemoglobin content of the cells diminishes and a dark colored pigment accumulates within the cells. Carbone,[1] Ascoli [2] and Brown [3] identified this pigment spectroscopically as hematin. However, their methods of extraction did not preclude the possibility that the hematin had been liberated from some preexisting complex. Fairley and Bromfield [4] described a pigment in the plasma of a patient with blackwater fever which spectroscopically appeared similar to methemoglobin. Further study of the pigment, however, suggested that it was a compound of hematin and plasma albumin to which Fairley gave the name "methemalbumin." In view of this diverse opinion a reinvestigation of the chemical identity of the malaria pigment was undertaken by Morrison and Anderson,[5] who obtained their parasite material from the blood of monkeys infected with Plasmodium knowlesi. In some animals these authors found as much as 75 per cent of the total erythrocytes containing malaria parasites in terminal infection. They dissolved the pigment from the parasite mass with sodium carbonate solution and then demonstrated the identity of its spectrophotometric curve with that of a solution of recrystallized hemin in 0.5 normal sodium carbonate. Morrison and Anderson thus confirmed the observation by Sinton and Ghosh [6] that 0.5 normal sodium carbonate does not alter hemoglobin within the time required to dissolve the pigment from the parasite. The pigment itself, they proved, is identifiable spectrophotometrically as hematin (ferrihemic acid). The study is being continued to determine, if possible, the role of the pigment in the malaria syndrome.

1. Carbone, T.: Gior. d. r. Accad. di med. di Torino **39:** 901, 1891.
2. Ascoli, V.: Abst. München. med. Wchnschr. **57:** 2315, 1910.
3. Brown, W. H.: J. Exper. Med. **13:** 290, 1911.
4. Fairley, N. H., and Bromfield, R. J.: Tr. Roy. Soc. Trop. Med. and Hyg. **28:** 307 (Aug.) 1934.
5. Morrison, Dempsie B., and Anderson, William A. D.: The Pigment of the Malaria Parasite, Pub. Health Rep. **57:** 90 (Jan. 16) 1942.
6. Sinton, J. A., and Ghosh, B. N.: Records Malaria Survey India **4:** 205, 1934.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT OF OFFICERS FOR MEDICAL DEPARTMENT, ARMY OF THE UNITED STATES

The following memorandum was sent by the Adjutant General's Office to all corps area and department commanders on January 21:

1. Letter from this office dated Feb. 3, 1941, file AG 381 (8-13-40) R-A, Subject: "Assistance of the American Medical Association in the classification and procurement of physicians for the military service," is rescinded.

2. There has been established under the Office for Emergency Management, Office of Defense Health and Welfare Services, a Procurement and Assignment Service to coordinate the procurement of physicians, dentists and veterinarians for all governmental, industrial and civilian requirements.

3. In order to expedite appointments in the Medical Corps, Dental Corps and Veterinary Corps, Army of the United States, the following procedure will govern the processing of all applications:

(*a*) All individual inquiries for information concerning a commission or offers to serve as a medical, dental or veterinary officer should be acknowledged by the headquarters receiving the communication and the communication itself forwarded by indorsement to the Executive Officer, Procurement and Assignment Service, Office of Defense Health and Welfare Services, Social Security Building, Washington, D. C.

(*b*) The Procurement and Assignment Service will supply to individual applicants who are eligible and qualified for appointment, the required forms (WD AGO Form No. 170, "Application for Appointment and Statement of Preferences for Reserve Officers," in duplicate, and WD AGO Form No. 178 and 178-2, both in duplicate) together with a request on the surgeon of the nearest army post for a final type physical examination. Each request for final type physical examination authorized by the Procurement and Assignment Service will be honored by surgeons of army posts. Application forms and supporting papers, except the report of physical examination, will be returned by the applicant to the Procurement and Assignment Service; the report of physical examination (WD AGO Form No. 63), will be forwarded by the surgeon of the station at which the examination was conducted, direct to the Surgeon General.

(*c*) The completed applications and supporting papers, except report of physical examination, will be transmitted by the Procurement and Assignment Service to the Surgeon General together with a statement by that service derived from its files and regarding eligibility of the applicant for appointment in the Medical, Dental and Veterinary Corps, Army of the United States, as prescribed by current Army Regulations. The Procurement and Assignment Service will also furnish the Surgeon General with the professional classification and evaluation of the applicant as determined from the recent nationwide survey made by the Committee on Medical Preparedness of the American Medical Association.

(*d*) The Surgeon General will forward such completed applications to the Adjutant General as prescribed in paragraph 10 (4), Army Regulations No. 605-10, and inform the Procurement and Assignment Service of the action recommended.

4. No change in the present procedure for the appointment of graduates of medical units of the Reserve Officers' Training Corps in the Medical Corps Reserve; nor for appointment in the Army of the United States of physicians and dentists for affiliated units; of junior and senior students in medical schools in the Medical Administrative Corps, Army of the United States; nor of graduates of such schools who are to be appointed in the Medical Corps, Army of the United States, on graduation.

5. When the applications for appointment have been approved, the Adjutant General will notify the applicant direct of his appointment with instructions as to proper completion of oath of office and finger print card and the return of such forms direct to the Adjutant General. When the oath of office has been received by the Adjutant General, the Surgeon General and the Executive Officer, Procurement and Assignment Service of the Office of Defense Health and Welfare Services, Office for Emergency Management, Washington, D. C., will be notified.

By order of the Secertary of War.

OCCUPATIONAL DEFERMENTS OF PHYSICIANS, DENTISTS AND DOCTORS OF VETERINARY MEDICINE

The following memorandum was released to all state directors of the Selective Service System on January 28:

Information previously distributed by this headquarters clearly indicates an overall shortage of physicians, dentists and doctors of veterinary medicine in the nation. Since war was declared, the shortage of these professional men has become acute. It is now manifest that every qualified doctor, dentist and veterinarian must serve where he can render the greatest professional service to the nation.

In order to accomplish this purpose, the President, by executive order, has formed the Procurement and Assignment Service, under the Office of Defense Health and Welfare Services. This service was formed primarily for the purpose of gathering and making available information with respect to the supply of qualified practitioners in the fields of medicine, dentistry and veterinary medicine, with a view of securing the most effective allocation of medical manpower as indicated by the requirements of the armed forces, civilian needs and industrial medicine.

To work with the headquarters of this service in Washington, there is being organized a committee for each corps area in the continental United States. Each committee will consist of five doctors, two dentists and one veterinarian. The committees have been accepted as advisers to the nine corps area surgeons, to the naval district surgeons and to the regional medical officers of the Office of Civilian Defense and will operate not only through the subdivisions of the medical, dental and veterinary

associations but also with the profession at large in securing information and giving advice.

When considering the classification of any registrant who is a qualified physician, dentist or doctor of veterinary medicine, the director of Selective Service desires that local boards, through the state director, shall consult the procurement and assignment committee of the corps area for information as to the availability of qualified physicians, dentists and doctors of veterinary medicine in the community. This information shall be considered by the local board in determining the registrant's classification. The executive order referred to in no way affects the authority of the Selective Service System to classify registrants. The procedure has been established for the purpose of making such information available to local boards.

For the convenience of the state director and the local boards, the names and addresses of the chairmen of the nine corps area committees of the Procurement and Assignment Service are listed:

First Corps Area—Dr. W. G. Phippen, Salem, Mass.
Second Corps Area—Dr. A. W. Booth, Elmira, N. Y.
Third Corps Area—Dr. A. M. Shipley, Baltimore.
Fourth Corps Area—Dr. Edgar Greene, Atlanta, Ga.
Fifth Corps Area—Dr. E. L. Henderson, Louisville, Ky.
Sixth Corps Area—Dr. Charles H. Phifer, Chicago.
Seventh Corps Area—Dr. Roy W. Fouts, Omaha.
Eighth Corps Area—Dr. Sam E. Thompson, Kerrville, Texas.
Ninth Corps Area—Dr. Charles A. Dukes, Oakland, Calif.

LEWIS B. HERSHEY, Director.

THE ARMY CENTRAL EPIDEMIC CONTROL BOARD

As announced by the Secretary of War in January 1941, a Central Epidemic Control Board, composed of physicians from civil life, has been established to function as an adviser to the Surgeon General of the Army, Major General James C. Magee. Since establishment of this Central Control Board rates for respiratory disease in the Army have been unusually low, although measles and influenza, particularly measles, this winter are registering an incidence among the civil population in certain areas greater than the five year average for the country. The low rate is due in part to the fact that the troops are seasoned and thus better able to resist disease. The seven members of the Central Control Board are Dr. Francis G. Blake, president of the board, professor of medicine and dean of the Yale University School of Medicine; Dr. O. H. Perry Pepper, professor of medicine, University of Pennsylvania School of Medicine; Dr. Alphonse R. Dochez, professor of medicine, Columbia University College of Physicians and Surgeons; Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine; Dr. Kenneth F. Maxcy, professor of epidemiology, School of Hygiene and Public Health, Johns Hopkins University; Dr. Andrew J. Warren, assistant director, International Health Division, Rockefeller Foundation, and Dr. Oswald T. Avery, member of the Rockefeller Institute for Medical Research.

The consultants appointed to advise this Central Board are Dr. Wilbur Sawyer, director of the International Division, Rockefeller Foundation, and Dr. E. S. Robinson, director of the Division of Biological Laboratories of the Massachusetts Department of Health.

Operating under the Central Control Board are eight investigating commissions, each of which has a number of consultants and teams.

Heading the Commission on Influenza is Dr. Thomas Francis Jr., professor and chairman of the Department of Epidemiology of the School of Public Health, University of Michigan. This group is carrying on intensive studies on influenza vaccines in cooperation with the Rockefeller Foundation. It is also making a study of the efficiency of various types of respiratory masks and laboratory studies of specimens collected in the field bearing on the cause of, transmission of and bodily resistance to influenza and its complications. The group is also investigating possible methods of inducing immunity other than by vaccination. The influenza commission is organized into three teams: an eastern team with headquarters in New York, a midwestern team with headquarters at the University of Michigan and a far western team with headquarters in the California State Department of Health, Berkeley, Calif. Should there be an influenza epidemic, the commission will undertake research looking to the nature of the virus involved and will study the effectiveness of the sulfonamide derivatives in the prevention of complications due to bacteriologic invasion following reduction of bodily resistance by the virus.

The Commission on Pneumonia is headed by Dr. Colin M. MacLeod, professor of bacteriology in the New York University College of Medicine. This commission deals with every type of pneumonia and is carrying on studies dealing with the classification of the pneumonia organism. Experiments are being conducted in methods of immunization employing civilian volunteers and in the use of chemical agents in the management of empyema. In event of epidemics of pneumonia in the Army, this commission will conduct examinations in the field to determine the nature of the infecting agent and to make such other studies as may be necessary for the development of effective control measures. Such field investigations may be made independently or in collaboration with the commissions on influenza, measles and hemolytic streptococcus infections. Following a preliminary inquiry of cases of atypical pneumonia at an army camp, a team composed of Dr. John H. Dingle of Harvard University, Dr. Berry Wood of Johns Hopkins University and Dr. Gerritt J. Budding of Vanderbilt University was sent to make a study of this disease.

The Commission on Hemolytic Streptococcus Diseases is headed by Dr. Martin H. Dawson of the Columbia University College of Physicians and Surgeons. This group arranges also for the manufacture and purchase of diagnostic streptococcus typing serums and the establishment of central group and typing laboratories and assists in collaboration with other commissions and with the Army Medical School in the grouping and typing of streptococcus strains. Attention is being given to the determination of the effect of the sulfonamide derivatives in the carrier state of the hemolytic streptococcus. The commission is now undertaking a special field investigation in the fifth and sixth corps areas in order to complete a preepidemic survey of the types of infectious organisms present and their relationship to scarlet fever and acute rheumatic fever. This work is being directed by Dr. Francis F. Schwenkter of the International Health Division of the Rockefeller Foundation.

Dr. Joseph Stokes Jr., professor of pediatrics at the University of Pennsylvania School of Medicine, heads the Commission on Measles, which deals with tests to detect the susceptibility to infection of individuals and undertakes to determine the possibility of inducing active immunity by the use of certain protein fractions of the blood. The group has also been charged with the additional duty of undertaking pertinent studies in mumps, with special emphasis on means of reducing the incidence of orchitis. Field investigation deals particularly with the effect of sulfonamide derivatives on the incidence and control of the bacteriologic complications of measles.

Dr. Perrin H. Long, professor of preventive medicine of the Johns Hopkins University School of Medicine, Baltimore, heads the Commission on Meningococcic Meningitis. This commission has established a central laboratory at the Johns Hopkins University to receive and type strains of meningococci, to standardize typing serums and to maintain and analyze therapeutic records on meningococcic meningitis in the Army. The commission is conducting studies dealing with the classification of the disease producing agent, the various serums used for diagnostic purposes and the curative effect of the sulfonamide derivatives. In event of a threatened epidemic of meningococcic meningitis in the Army, this commission will be called on to aid in developing control measures, to conduct bacteriologic investigation concerning the prevalence of types of meningococci and to study the epidemic aspects of the outbreaks and the effects of chemotherapeutic agents on the incidence and duration of the carrier state.

Dr. John R. Paul, associate professor of medicine of the Yale University School of Medicine heads the Commission on Neurotropic Virus Diseases. New fields for research have been opened up with the development of new laboratory procedures for the diagnosis and differentiation of neurotropic virus disease, and a special virus laboratory was set up at the Army Medical School in October 1941. This laboratory is collaborating with the commission in serologic and immunologic studies. The chief object of field studies to be undertaken will be the development of control measures and search for the presence of the virus in materials from patients. Particular attention is being given to the possible relationship by the sleeping sickness of horses and that of man. A vaccine which affords protection to horses leads to the hope that similar protection may be conferred on man—an important question which will be investigated.

Dr. Stanhope Bayne-Jones, professor of bacteriology at the Yale University School of Medicine, heads the Commission on Epidemiological Survey. The duty of this commission is essentially that of counterespionage—a detector command which will keep constant check on organisms producing disease in man. This commission conducts periodic surveys throughout the year in different geographic areas of the country to determine the presence of disease germs in the upper respiratory tract of selected groups of soldiers. The purpose of these surveys is to furnish a base line of the "normal" incidence of respiratory pathogens and to watch for significant changes in respiratory flora which might indicate the imminence of epidemics of respiratory diseases. Such a study of military personnel in camps in the first corps area is now being made by a team composed of Dr. J. Howard Mueller, Dr. John F. Enders and Dr. George Hartley Jr., all of Harvard University. Another investigation, of "San Joaquin Valley fever" in personnel stationed at certain aviation training centers in California, is being carried on by the commission under the supervision of Dr. Charles E. Smith of Stanford University.

Dr. Oswald H. Robertson of the Department of Medicine, University of Chicago Medical School, heads the Commission on Cross Infections in Hospitals. This commission conducts long term studies on methods for reducing the existence of cross infection in hospital wards with special emphasis on the ultraviolet radiation and the development of effective chemical agents for the sterilization of air.

DEFERMENTS OF PROFESSIONAL STUDENTS AND INSTRUCTORS

The Selective Service System, Washington, D. C., on January 12, issued the following supplement to Memoranda (I-62), (I-91), (I-99) and (I-150) Occupational Deferment of Engineering, Chemical, Physics, Medical, Dental Students and Instructors (III):

The attention of local boards is again invited to the necessity of seriously considering for deferment students in certain specialized professional fields in which dangerously low levels of manpower are found to exist. This memorandum is in addition to and does not rescind those previously issued which apply to students in other critical fields.

Subsequent to the declaration of war, local Selective Service agencies have in many instances proceeded to classify registrants without regard to the fact that they are in training or preparation for activities the maintenance of which is essential to the national health, safety or interest and war production. This is particularly true in cases of engineering, chemical, physics, medical and dental students.

Admittedly there is an overlapping of the military and civilian requirements of a nation at war; however, it must be borne in mind that the one is dependent on the other. It is estimated that the expanding army will eventually require doctors and dentists in numbers heretofore unknown. They will not be available if those students who show reasonable promise of becoming doctors and dentists are inducted prior to becoming eligible for commissions.

War industries are undergoing a hitherto unknown expansion. Aeronautical, civil, electrical, chemical, mining, metallurgical, mechanical and radio engineers together with physicists and chemists are essential to insure a sufficient flow of material for the armed forces, and industry must look to the engineering, chemical and physics students now in training to meet their present and future requirements.

It is equally important that instructors in these fields be seriously considered for occupational deferment. Shortages of qualified instructors are known to exist. The educational institution employing the instructor should be requested to file DSS Form 42A in all cases in which deferment is sought.

In considering student deferment cases, certain local boards are requiring the execution of DSS Form 42A in addition to the affidavit of the college or university contained in Bulletin No. 10 issued by the American Council on Education. DSS Form 42A should not be required when the American Council on Education affidavit has been submitted.

Local boards will be informed when the manpower requirements necessary to the national health, safety or interest and war production become static. Until such time, the policy set forth in the Memoranda to All State Directors I-62, I-91, I-99 and I-150 remains in force.

LEWIS B. HERSHEY, Director.

MAN POWER OF THE NATIONS AT WAR

On the basis of volume of man power of fighting age, the United States and its allies would have a two to one chance of victory according to an estimate of war age males in the belligerent countries made by the United States Bureau of the Census, Department of Commerce.

Allies—Males Aged 18-35 as of July 1, 1941
(Estimated)

United States	
Continental United States	19,914,000
The Philippines	2,400,000
Other U. S. territories and possessions	482,000
Total U. S. and possessions	22,796,000
Great Britain and Dominions	
United Kingdom	6,815,000
Australia	1,083,000
Canada	1,797,000
New Zealand (excepting Maoris)	238,000
Union of South Africa (white)	340,000
Total Great Britain and Dominions (excluding India)	10,273,000
(India had an estimated 58,244,000 males between 18 and 35 as of July 1, 1941 and, if India should be included, the total for Great Britain and its dominions would be	68,517,000
Russia	
Russia (Europe and Asia)	23,574,000
China	
If it was possible to mobilize the full strength of China's 18-35 age group of males there would be added to the Allies' strength approximately	49,000,000
Total Allies (18-35 males) not including India and China	56,643,000
Total Allies (18-35 males) including India and China	163,887,000

NOTE.—Because of the incomplete census records respecting the natives of the Netherlands Indies, the U. S. Census Bureau did not undertake to estimate its 18-35 male population. Its total male and female population of all ages is estimated at 69,435,000.

Axis Nations—Males Aged 18-35	
Germany (including Austria and Sudetenland)	11,281,000
Italy	6,440,000
Japan (excluding Korea and Manchukuo)	10,839,000
Total Axis Nations	28,560,000

The Census Bureau compilation indicates that the principal belligerents, by making fighters of all males between the ages of 18 and 35, would be able to place 85,203,000 men in the field, not including China, India and the Netherlands Indies. Of the grand total, 56,643,000 would serve under allied flags and 28,560,000 under Axis flags.

If China and India were to be included, the number of fighting males between 18 and 35 in the allied nations would aggregate 163,887,000.

The analysis of the Census Bureau was made from the latest censuses of all the nations involved, with projections brought forward to July 1, 1941. The figures do not take into account casualties already suffered, but these would not seriously disturb the ratio.

The estimates likewise do not include, on either side, the males of 18 to 35 in the occupied countries of France, Czechoslovakia, Denmark, Estonia, Greece, Latvia, Lithuania, Netherlands, Norway, Poland, Yugoslavia and French Indochina, whose total population, male and female of all ages, is 167,978,000.

CIVILIAN COOPERATION AT HONOLULU AND PEARL HARBOR

Hundreds of lives are reported to have been saved following the December 7 attack on Honolulu and Pearl Harbor through the use of the adequate supply of blood plasma and other blood substitutes made immediately available to the Army and Navy by the civilian defense group of Honolulu, which was part of a prearranged plan set up by the Army department surgeon Col. Edgar King, who had requested also the civilian medical group to organize surgical teams for army service. The head of the Civilian Plasma Bank of Honolulu was Dr. Forrest J. Pinkerton. Immediately after the bombing started, the wives of officers and enlisted men rushed to Hickam Field Hospital to aid the few nurses on duty at the time, where they did heroic work in the hospital kitchens and in making bandages and surgical dressings. The main army post kitchens having been blasted by bombs, the Hickam Field Hospital kitchens for a while fed fifteen hundred persons daily. This information was brought to light in a report to the Surgeon General of the Army by Dr. Perrin Long of Johns Hopkins University Medical School, Baltimore, and Dr. I. S. Ravdin of the University of Pennsylvania School of Medicine, Philadelphia. The report stressed the speedy transfer of the wounded to the U. S. Army Tripler General Hospital, the splendid cooperation of the civilian defense group, and the incalculable value of the sulfonamide treatment of wounds following the Japanese attack. They said: "We have been impressed again and again with the incalculable value of sulfonamide therapy in the care of many of the casualties," the report states. "We believe that it is highly important that physicians—both civilian and military—become familiar with the general and specific considerations which govern the use of oral and local use of the sulfonamides in the treatment of wounds and burns and that, so far as it is possible, routine methods for the use of sulfonamides in casualties be devised and adopted. . . .

"The Committee on Chemotherapy and the Committee on Wound Infection should receive information on the startling efficacy of sulfonamide therapy in the open wounds."

BASE HOSPITAL NO. 17 REORGANIZED

Base Hospital No. 17, which served during the first world war, comprising members of the staff of Harper Hospital, Detroit, is being reorganized for service in the present war under the command of Col. Henry R. Carstens, president of the Michigan State Medical Society. Dr. Louis J. Hirschman will be chief of the surgical service and Dr. E. D. Spalding chief of the medical service. These three medical officers served in the first world war. Other physicians already assigned to the present unit are Majors Douglas Donald, Charles E. Lemmon and Lowell B. Ashley, Capts. John Tulloch and S. G. Meyer, and Lieuts. George T. McKean and Don M. Murphy. The skeletonized organization will eventually comprise at least forty-two physicians. In the first world war the Harper Hospital unit was headed by Dr. Angus McLean and served first as a Red Cross unit and later as an army unit at Dijon, France, from which point some of its units saw service in the front lines.

DAYTON SPECIALIST UNIT ORDERED TO ACTIVE DUTY

Six of the nine members comprising the Medical Specialist Unit of Dayton, Ohio, were ordered to report for active duty at a naval hospital on January 12. The members of the unit who received orders were Commander Walter M. Simpson, an internist, director of the laboratories at Miami Valley Hospital, Dayton; Lieut. Commanders Harry R. Huston, a surgeon; Marion W. Coleman, a urologist; James L. Sagebiel, a neuropsychiatrist; Jerome Hartman, an orthopedic surgeon, and Arthur M. Culler, an ophthalmologist. This unit comprises six nurses also. During his absence Dr. Simpson's place as director of the laboratories at Miami Valley Hospital will be taken by Dr. Melvin Oosting, assistant director of laboratories, and Dr. Simpson's position as director of the medical research at the Kettering Institute will be taken by Dr. H. Worley Kendell, assistant director. This Dayton unit was organized in 1934 at the suggestion of the Surgeon General of the Navy and, although one of the first organized, is now one of many similar medical units.

HAWAII NEEDS MEDICAL SUPPLIES

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, says that an urgent appeal has been received from Queens Hospital, Honolulu, for drugs and instruments with which physicians may help take care of existing casualties. Among the things needed as indicated by the list furnished by the committee are catgut and silk sutures, Luer syringes of various sizes, hypodermic needles, cotton, gauze, bandages and drugs, including unguentine, boric acid ointment, gentian violet powder, rubbing alcohol, phenobarbital, soluble, pentobarbital, procaine hydrochloride, nikethamide, sulfanilamide, sulfathiazole, epinephrine and tetanus antitoxin. Arrangements have been made for the free transportation of these articles from various points in this country to Hawaii by truck, steamer and plane.

NAVY RECOGNIZES ALLERGY AS A SPECIALTY

The commanding officer of the U. S. Naval Medical School, Washington, D. C., recently recommended that allergy be officially recognized as a specialty in the Navy and that postgraduate training in the subject be instituted. The advisory board considered the recommendation and the Surgeon General of the Navy approved it. Arrangements are being made with various medical colleges and with some well known allergists in private practice to provide instruction in this subject to selected naval medical officers.

REAR ADMIRAL STITT AWARDED THE THEOBALD SMITH MEDAL

At the recent annual meeting of the American Academy of Tropical Medicine in St. Louis, Rear Admiral E. R. Stitt, M. C., U. S. Navy, was awarded the Theobald Smith gold medal of the George Washington University, Washington, D. C. Admiral Stitt, a former surgeon general of the U. S. Navy and former president of the Association of Military Surgeons of the United States, is the author of a well known book on tropical medicine and of another on laboratory procedures.

GOVERNMENT TO PROVIDE SOLDIERS WITH SPECTACLES

The War Department announced on January 18 that the army will provide all persons in the military service with spectacles when required and will replace lenses and frames when damaged or lost in the performance of military duty. These spectacles will conform to specifications to be issued by the Surgeon General of the Army. Individuals desiring a different kind must pay for them.

PURCHASE FOUR MILLION SHOES IN MARCH

After conferences in Washington between shoe manufacturers and the U. S. Army quartermaster procurement officers, it was estimated that during March and April the Army will purchase about two million pairs of shoes and that later the purchasing plans will be revised to still higher figures. The shoe manufacturers at present have ample capacity to increase their shoe production to the desired level without increase in factory facilities. The foregoing rate of purchase is about twice that of the Army at present.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

BORENSTINE, Joseph, 1st Lieut., Boston, Fort Devens, Mass.
COLLINS, Ray W., Jr., 1st Lieut., Colchester, Vt., Fort Adams, R. I.
DOUCET, Charles S., Lieut. Colonel, Central Falls, R. I., Camp Lee, Va.
DUENNEBIER, Harold W., 1st Lieut., Hartford, Conn., Windsor Locks, Conn.
DUNBAR, Clarence E., Lieut. Colonel, Manchester, N. H., Camp Lee, Va.
GRULEE, Clifford G., Jr., 1st Lieut., Boston, Fort Devens, Mass.
HASELHUHN, Donald H., 1st Lieut., Springfield, Mass., Army Air Base, Manchester, N. H.
KEES, Philip A., Captain, Longmeadow, Mass., Westover Field, Mass.
KREIDBERG, Marshall B., 1st Lieut., Boston, Bangor, Maine.
LARSON, Karl V., 1st Lieut., Machias, Maine, Camp Lee, Va.
LEVIN, AARON H., 1st Lieut., Newton Center, Mass., Fort Devens, Mass.
LONG, Norman G., Captain, Lowell, Mass., Fort Banks, Mass.
MAECK, John VanS., 1st Lieut., Shelburne, Vt., Fort Devens, Mass.
NEFF, Richard S., 1st Lieut., Boston, Fort Devens, Mass.
RECORD, Eugene E., 1st Lieut., Boston, Fort Devens, Mass.
SCRIBNER, Robert A., 1st Lieut., Haverhill, Mass., Camp Edwards, Mass.
STANLEY, Howard W., 1st Lieut., Worcester, Mass., Camp Lee, Va.
SUTCH, Gabriel C., 1st Lieut., Howard, R. I., Fort Devens, Mass.
WINDUS, Charles E., 1st Lieut., New Haven, Conn., Bangor, Maine.
WITTE, Max E., Captain, Bangor, Maine, Fort Devens, Mass.

Orders Revoked

CORRIGAN, Francis V., 1st Lieut., Providence, R. I.

Relieved from Active Duty

CAREY, Francis G., 1st Lieut., Dorchester, Mass.
LEVIN, Spencer E., Captain, Boston.
ROBEY, Nathaniel C., Captain, Newton Center, Mass.
ZENTGRAF, Leo P., 1st Lieut., Manchester, Mass.

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

BRENNER, Joel Jerome, 1st Lieut., Brooklyn, Camp Upton, N. Y.
BREZINSKI, Edward, 1st Lieut., Perth Amboy, N. J., Fort Jay, N. Y.
COMDEN, Nathaniel, 1st Lieut., New York, Camp Croft, S. C.
CORTESE, Joseph T., 1st Lieut., Newark, N. J., Fort Bragg, N. C.
HARTSTEIN, Edward, 1st Lieut., Brooklyn, Fort Dix, N. J.
KAPLAN, Harry, 1st Lieut., New York, Fort Dix, N. J.
KELLEY, Wayne, 1st Lieut., Leonardsville, N. Y., Camp Lee, Va.
KING, Walter G., 1st Lieut., Binghampton, N. Y., Pine Camp, N. Y.
O'BRIEN, Kennedy W., 1st Lieut., Astoria, N. Y., Fort Screven, Ga.
RUBBONE, Mario, 1st Lieut., Astoria, L. I., N. Y., Fort Dix, N. J.
STRINGER, Sydney, Captain, Syracuse, N. Y., Fort Monmouth, N. J.
WIESEN, Arnold Maxwell, 1st Lieut., Riverhead, N. Y., Camp Upton, N. Y.

Orders Revoked

ADLER, Harry, 1st Lieut., Elmira, N. Y.
AMDUR, Marvin L., 1st Lieut., Buffalo.
AMSTER, Joseph J., 1st Lieut., Brooklyn.
BERKOWITZ, Carl, 1st Lieut., New York.
GOLAN, Myer E., 1st Lieut., New York.
JUCHLI, Rene H., Captain, Amsterdam, N. Y.
KANENGISER, Clifford H., 1st Lieut., North Bergen, N. J.
LYNCH, Vincent A., 1st Lieut., Lincoln Park, Mich.
MAZZA, Peter A., 1st Lieut., Mount Vernon, N. Y.
NIEMAN, Solomon Z., 1st Lieut., New Brunswick, N. J.
RHOADS, Harmon T., Jr., Captain, New York.
ROSENBERG, Albert B., Captain, North Plainfield, N. J.
SAFIR, Samuel S., 1st Lieut., Jackson Heights, N. Y.
SAMUELS, Sol L., 1st Lieut., Plainfield, N. J.
SOLOVAY, Hyman, 1st Lieut., Brooklyn.
THORNE, Irving J., 1st Lieut., New York.

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland:

BIANCARELLI, Edmund Joseph, 1st Lieut., Jessup, Pa., Fort Belvoir, Va.
BUCKLEY, Michael Lester, 1st Lieut., Arlington, Va., Fort Story, Va.
COBERN, Charles Blair, 1st Lieut., Washington, Pa., Carlisle Barracks, Pa.
COTTER, John Joseph, 1st Lieut., West Wyoming, Pa., Aberdeen Proving Ground, Md.
DE MEULES, Edgar A., 1st Lieut., Philadelphia, Fort Belvoir, Va.
DIFRANCESCO, Vincent James, 1st Lieut., Washington, D. C., Fort Eustis, Va.
DRAYER, Calvin Searle, Captain, Upper Darby, Pa., Camp Lee, Va.
DRIVER, Samuel Francis, 1st Lieut., Troutville, Va., Holabird Quartermaster Depot, Baltimore.
EASTHAM, John Philip, 1st Lieut., Culpeper, Va., Indiantown Gap Military Reservation, Pa.
EISNER, Abraham G., 1st Lieut., Scranton, Pa., Aberdeen Proving Ground, Md.
FARLEY, Otis Rhanor, 1st Lieut., Washington, D. C., Carlisle Barracks, Pa.
FARRELL, George Raymond, 1st Lieut., Washington, D. C., Indiantown Gap Military Reservation, Pa.
FINEGAN, Eugene F., 1st Lieut., Washington, D. C., Edgewood Arsenal, Md.
GAY, James Rowland, 1st Lieut., Baltimore, Fort George G. Meade, Md.
GOULD, Ernest Alva, 1st Lieut., Washington, D. C., Aberdeen Proving Ground, Md.
HAFT, Abraham Seamor, 1st Lieut., Washington, D. C., Carlisle Barracks, Pa.
HEIM, Hugh Wilson, 1st Lieut., Schuylkill Haven, Pa., Camp Lee, Va.
JOHNSON, Robert Chester, 1st Lieut., Allison, Pa., General Dispensary, U. S. Army, Philadelphia.
JONES, Clement Russell, Jr., Captain, Dixmont, Pa., Fort Belvoir, Va.
KIEHL, Paul Victor, 1st Lieut., Drexel Hill, Pa., General Dispensary U. S. Army, Baltimore.
LUKAS, Alexander Benjamin, 1st Lieut., Shenandoah, Pa., Indiantown Gap Military Reservation, Pa.
McKEE, Carlisle Emerson, Jr., 1st Lieut., Pittsburgh, Fort Eustis, Va.
McLAIN, Paul Larimer, Captain, Pittsburgh, Camp Lee, Va.
MESSMORE, Isaac Lindsey, 1st Lieut., Masontown, Pa., Carlisle Barracks, Pa.
MOORMAN, John Hope, Jr., 1st Lieut., Harrisonburg, Va., Fort Eustis, Va.
MULDAWER, Milton Earl, 1st Lieut., Philadelphia, Carlisle Barracks, Pa.
O'MEARA, Thomas Joseph, 1st Lieut., Swissvale, Pa., Aberdeen Proving Ground, Md.
PEARCE, Leroy Sannoner, 1st Lieut., Farmville, Va., Edgewood Arsenal, Md.
PEKIN, Thomas Joseph, 1st Lieut., Washington, D. C., Camp Lee, Va.
PLUMER, Joseph Neilson, 1st Lieut., Cresson, Pa., Fort Eustis, Va.
PORTER, Edgar Lee, 1st Lieut., Embreeville, Pa., General Dispensary U. S. Army, Philadelphia.
ROBINSON, William Herbert, III, 1st Lieut., Roaring Spring, Pa., Fort George G. Meade, Md.
SCHROEDER, Alfred Richard, 1st Lieut., Washington, D. C., Aberdeen Proving Ground, Md.
SPAHR, Richard R., Colonel, Mechanicsburg, Pa., Fort Devens, Mass.
SULLIVAN, Herbert Hilary, Lieut. Colonel, Pittsburgh, Camp Lee, Va.
TANKIN, Louis Haberer, 1st Lieut., Baltimore, Edgewood Arsenal, Md.
WAISBROT, Edward Louis, 1st Lieut., Philadelphia, Fort Eustis, Va.
WEINER, Marcus Allen, 1st Lieut., Washington, D. C., Carlisle Barracks, Pa.
WOOD, Rowland Emery, 1st Lieut., Philadelphia, Fort Eustis, Va.

Orders Revoked

BENZ, George Henry, 1st Lieut., Pittsburgh.
HENDERSON, Charles Henry, Captain, Norton, Va.
MASLAND, Richard Lambert, 1st Lieut., Philadelphia.
SETTLE, William Booth, Captain, Baltimore.

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bill Introduced.—H. R. 6399, introduced by Representative Randolph, West Virginia, proposes to authorize the appropriation of such sums as may be necessary to enable the commissioners of the District of Columbia to provide for the accommodation, in addition to existing capacity, of 1,000 bed patients in hospitals operated by the District of Columbia.

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2217 has been reported to the Senate, providing that during the present war personnel of all components of the Army may be detailed as students at technical, professional and other educational institutions or as students, observers or investigators at industrial plants, hospitals and other places. H. R. 6293 has been reported to the House, proposing to establish a Women's Army Auxiliary Corps for noncombatant service with the Army of the United States. H. R. 6430 has passed the House, making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions and offices for the fiscal year ending June 30, 1943. This bill contains an item of $4,557,000 for hospital and domiciliary facilities for veterans.

Bills Introduced.—S. 2188, introduced by Senator Reynolds, North Carolina, contemplates the appointment of an officer of the Veterinary Corps as assistant to the Surgeon General of the Army with the rank of brigadier general. S. 2201, introduced by Senator Capper, Kansas, provides that in any case in which the production of a birth certificate is required under any provision of law in connection with the employment of any person by any executive department or other governmental agency, and such birth certificate either cannot be obtained or cannot be obtained without unreasonable delay, proof of the birth of such person satisfactory to the department or agency concerned may be accepted in lieu of the production of the birth certificate. H. Res. 409, submitted by Representative Barry, New York, proposes to create a select committee to be composed of five members of the House of Representatives to investigate the manner in which deferments have been granted under the Selective Training and Service Act of 1940 with a view to determining whether or not the policy of Congress with respect to such deferments is being properly and uniformly applied.

STATE MEDICAL LEGISLATION

Kentucky

Bills Introduced.—H. 95 proposes to enact a new pharmacy practice act which, among other things, proposes to limit the sale and distribution of drugs and medical supplies to pharmacies operating under permits issued by the board of pharmacy. The term "medical supplies," as used in the bill, is defined to include absorbent cotton, bandages, gauze, sutures, compacts, compresses, surgical dressings and other products and appliances used in the diagnosis, cure, mitigation, treatment or prevention of disease. The bill, if enacted in its present form, would seem to cast serious doubt on the legal right of a licensed physician to dispense, and possibly to use, drugs or medical supplies with respect to his own patients. H. 96 proposes to enact what is cited as the Kentucky Food, Drug and Cosmetic Act to regulate the manufacture, sale, distribution and advertising of foods, drugs, cosmetics and therapeutic devices.

Mississippi

Bill Introduced.—H. 205 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate as to the absence of any contagious disease in the party.

New Jersey

Bills Introduced.—A. 9 proposes, apparently, to repeal the medical practice act. A. 41 proposes to authorize the board of chosen freeholders of any county of the second class to create the office of county chief medical examiner. The bill proposes that when any person shall die as a result of violence, or by casualty or suicide, or suddenly when in apparent health, or when unattended by a physician, or within twenty-four hours after admission to a hospital, or in prison, or in a suspicious or unusual manner, the police department of the municipality in which he died, or the superintendent or medical director of the institution in which he died, or the physician called in attendance, shall immediately notify the office of the chief medical examiner and it is then to be the duty of the chief medical examiner to investigate fully the circumstances of the death.

New York

Bills Introduced.—S. 312 proposes to enact a new law regulating the manufacture, sale, distribution and advertising of foods, drugs, cosmetics and health devices. A. 308, to amend those provisions of the medical practice act relating to the practice of physio-therapy, proposes that any person holding a registered license to practice physio-therapy who on the submission of proper credentials satisfies the regents that he has sufficient training or experience may be granted the right to use the physio-therapy modalities of actinotherapy, hydrotherapy, mechanotherapy, thermotherapy and electrotherapy, exclusive of the x-ray, without the supervision of a duly licensed physician. A. 388 proposes to require every local board of health and every health officer to exercise proper and vigilant medical inspection of all persons, 21 years of age or over, infected with poliomyelitis, and, after approval by the state commissioner of health, provide at the remedial stages of the disease surgical, medical or therapeutic treatment or hospital care, and necessary appliances and devices for persons so infected or exposed who cannot otherwise be provided for. One half of the cost of providing such treatment, care and appliances is to be made a charge against the county, or the city of New York, as the case may be, in which the afflicted person resides, and the other one half of the cost is to be paid for by the state. A. 493 proposes to require every physician immediately to give notice to the health officer of the county, city, town or village wherein he resides of every case of infantile paralysis under his care, provided that when such cases occur in districts of less than fifty thousand population not having a whole time health officer or in state institutions, such cases are to be reported directly to the state department of health or its district health officer. A. 504, to amend the workmen's compensation act, proposes to require an employer to provide for the hospitalization of an employee mentally disabled as the result of an accident arising out of and in the course of his employment. S. 215 and A. 226 proposes to create a temporary state commission to make a study of the prevalence, causes and effects of hay fever and kindred ailments and to devise and recommend remedial procedures and legislation designed to effect their treatment, cure and ultimate elimination.

Virginia

Bills Introduced.—S. 16 proposes that, whenever in a civil or criminal proceeding issues arise on which the court deems expert evidence desirable, the court may, on its motion or on the motion of either party, appoint one or more experts, not exceeding three, to testify at the trial. H. 28 proposes to authorize designated state officials and judges to consent to the surgical and medical treatment of persons under 21 years of age who are separated from the custody of their parents or guardians and

are in need of surgical or medical treatment. H. 40 proposes to authorize the respective governing boards of the Medical College of Virginia and of the University of Virginia to establish four annual medical scholarships each, each scholarship to be of an annual value of $550. A person receiving such a scholarship must agree to pursue the medical course of the school awarding this scholarship until his graduation and, after graduating and completing a term of not exceeding two years as an intern at some approved hospital or institution, to engage continually in the general practice of medicine in a rural community in the state of Virginia, selected by the state health commissioner, for a period of years equal in number to the years that he has been or shall be a beneficiary of the scholarship. H. 51, to supplement the medical practice act, proposes, except as is otherwise provided in the section of the act relating to exemptions, that no person shall practice medicine in any of its branches in the state without a valid, unrevoked certificate or license authorizing such practice issued by the state board of medical examiners and duly recorded as required by law. H. 52 proposes to authorize any court of record having chancery jurisdiction to enjoin and restrain any person from practicing medicine in any of its branches in the state without a valid, unrevoked certificate or license authorizing such practice issued by the state board of medical examiners and duly recorded as required by law.

MEDICAL ECONOMIC ABSTRACTS

THE NATION'S HEALTH

In spite of all the pessimistic outpourings on health conditions, Dr. S. S. Goldwater took a decidedly optimistic outlook in an address before America's Town Meeting of the Air, Dec. 4, 1941. Some of the more significant points brought out in this address are quoted or summarized in the following:

In public health circles it has become the fashion, partly on the basis of loosely compiled statistics of physical defects, to picture the United States as a decadent and decrepit nation. We are told that we are a toothless, almost sightless, people, that we have flat feet, flabby muscles and weak minds. We are warned that we are undernourished, that our vital organs are degenerating, that we are no match for the germs of disease that are within us and all about us.

I refuse to subscribe to this doctrine of despair, for it is a doctrine founded on half truths. It is true that physical defects are common among us, but many of the defects that are used in the compilation of alarmist statistics are only minor defects. Modest doctors of medicine and public health officers often present their depressing tabulations with an apologetic air. Now while it is true that medicine has not yet solved the problem of the common cold and that public health administration is not yet able to guarantee perfect living and working conditions, both professions have accomplished such wonders that an attitude of abject humility ill becomes them. I take off my hat to them!

The familiar indictment asserts that private medical practice, the voluntary hospital system and local health administration have failed. It is implied that medical care must be administered by government, since government alone is in a position to promise that no preventable illness will be disregarded, that no sick person will be neglected, that no imperfection in medical technic will be tolerated.

I am ready to acknowledge the difficulty of immediately providing prompt and sufficient private medical care for all regions and all classes, but I believe in the practicability of substantial further progress under private and local initiative and control. Although government aid may be required, the limits of self help have not been reached.

There are many hopeful signs. Medical education is improving all the time. A great number of first class hospitals are engaged in research. The unsolved problems of medicine are under constant attack. Hospital administration has been systematized. Many cities and some states are now well supplied with hospital beds. Health centers are rapidly multiplying. Farmers are banding together to secure needed medical service. Industry is subjecting itself to more rigid health supervision. Employers are cooperating with their employees in providing medical care. Housing reform is now an accepted public policy. Discoveries concerning nutrition have made it possible to plan for the better distribution and the wiser use of food. Infant mortality is at a new low. Childbirth has lost most of its terrors. The significance of planned parenthood is understood. Tuberculosis slowly declines. The utilization of hospitals is increasing. Dentistry is being brought into proper focus with medicine. Public health nursing is expanding. Outpatient services are improving. Home medical service is being provided for families on relief.

For the great mass of regularly employed low income workers, a powerful economic barrier to prompt hospital care can be removed by the wider development of voluntary prepayment plans for group hospitalization and related medical care. Such plans, though still in their infancy, already provide hospital service, when needed, for nearly eight million persons.

WOMAN'S AUXILIARY

Georgia

The Woman's Auxiliary to the Fifth District Medical Society held its semiannual meeting, recently, at the Crawford W. Long Hospital in Atlanta. Mrs. J. Harry Rogers, district manager, presided. Among the guests were Mrs. Lee Howard, Savannah, and Mrs. J. Lon King, Macon, president and president-elect respectively of the Woman's Auxiliary to the Medical Association of Georgia; Mrs. W. A. Selman, Atlanta, vice president of the state group; Mrs. Eustace Allen, Atlanta, chairman of revisions for the national group; Mrs. Olin Cofer, councilor from Georgia to the Woman's Auxiliary to the Southern Medical Association; Mrs. Allen Bunce, wife of the president of the Medical Association of Georgia; Mrs. C. W. Roberts, wife of the president of the Fifth District Medical Society, and Mrs. Murdock Equen, president of the Woman's Auxiliary to the Fulton County Medical Society.

Dr. Roberts introduced Dr. Allen Bunce, who spoke on "The Future of Medicine in Georgia." Mrs. King talked on the part that the physician's wife must play in national defense, and Mrs. Howard stressed the problems of the auxiliary. Mrs. Jeff Richardson, chairman of health films in the Fifth District, told of her plans for this project.

The wives of army physicians stationed at the various hospitals or camps in the vicinity of Atlanta were honor guests at the meeting of the Woman's Auxiliary to the Fulton County Medical Society, recently, at the nurses' home of Crawford W. Long Hospital, Atlanta. Mrs. Murdock Equen, president, presided. Colonel Cooley spoke of Lawson General Hospital, which cares for soldiers throughout the area. Dr. Edgar H. Greene, medical director of selective service for Georgia, exhibited a chart showing the causes for which draftees were rejected.

Tennessee

The newly elected president of the Woman's Auxiliary to the Rutherford County and Stone's River Academy of Medicine, Mrs. S. B. Smith, presided over a recent meeting at the home of Mrs. B. W. Rawlings. Mrs. G. B. Thackston, a guest, spoke on "America in a Postwar World."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Regional Meeting. — The Northwestern Division of the Medical Association of the State of Alabama met at the Negley Hotel, Florence, January 28, for the following program:

Dr. John J. Shea, Memphis, Tenn., The Management of Fractures of the Face.
Dr. William J. B. Owings, Brent, Poliomyelitis: A Personal Experience.
Dr. Seale Harris, Birmingham, The Food Factor in Winning the War.
Dr. Ralph C. Benson, Birmingham, Simplicity in Gynecologic Practice.
Dr. William H. Spruell, Russellville, Fascia in Hernial Repair.

ARKANSAS

New Specialty Group.—The Arkansas Society of Obstetrics and Gynecology was organized at a meeting in Little Rock on December 18 with the following officers: Drs. Ernest H. White, Little Rock, president; Clyde D. Rodgers, Little Rock, vice president, and Ruth Ellis Lesh, Fayetteville, secretary-treasurer.

Hospital News.—St. Edward's Mercy Hospital, Fort Smith, believes that the past year was a record one for an institution of its size and type. The hospital has a normal capacity of one hundred beds and sixteen bassinets and is classified as general. In the past year there were 3,857 admissions and 586 babies delivered. The federal government has recently approved a $90,000 grant to assist in a $200,000 expansion program.

Society News. — The Ninth Councilor District Medical Society was addressed in Harrison, December 3, by Dr. Arthur F. Hoge, Fort Smith, among others, on "Cirrhosis of the Liver." —— Dr. Joseph W. Kelso, Oklahoma City, discussed "Repair of Third Degree Lacerations" before a recent meeting of the Pulaski County Medical Society; guests of honor at this session were Dr. Herbert Fay H. Jones, Little Rock, president of the state medical society, and Drs. Melvin E. McCaskill, Little Rock, Merriman L. Norwood, Lockesburg, William T. Wootton, Hot Springs National Park, Frank Vinsonhaler, Little Rock, Oscar J. T. Johnston, Batesville, and Albert S. Buchanan, Prescott, past presidents of the state society.——Dr. Roy E. Schirmer, Fort Smith, addressed the Sebastian County Medical Society, December 9, on control of venereal diseases.

CALIFORNIA

Equine Encephalomyelitis and Mosquito Control.—The twelfth annual conference of the California Mosquito Control Association was held at the University of California at Berkeley, December 15-16. A symposium on equine encephalomyelitis was presented by the following:

William B. Herms, A.M., professor of parasitology and entomologist in the experiment station at the University of California, Berkeley, Introduction.
Beatrice F. Howitt, A.M., associate in research medicine, University of California Medical School, San Francisco, Relationship of Equine Encephalomyelitis and St. Louis Encephalitis to Man and Animals in California.
William C. Reeves, B.S., division of entomology and parasitology, University of California Medical School, Newer Developments in Knowledge of Insect Hosts and Vectors.
Dr. William McD. Hammon, George Williams Hooper Foundation, University of California Medical School, San Francisco, Host Animals of Virus Encephalitis.

Speakers in a symposium on mosquito control and national defense were:

Dr. Bertram P. Brown, San Francisco, director of the state department of public health, Introduction.
Stanley B. Freeborn, Ph.D., professor of entomology and assistant dean of the College of Agriculture, University of California, Berkeley, Military Mosquito Control in World War I.
Dr. Richard H. Creel, medical director, U. S. Public Health Service, San Francisco, Federal Aid in Mosquito Control Work.
F. C. Peters, B.S., in charge of mosquito control, bureau of sanitary engineering, California department of health, Mosquito Breeding and Control in Vicinity of Military Zones.

A banquet session was addressed by Dr. Alfred C. Reed, professor of tropical medicine at University of California Medical School, San Francisco, on "Problems Involved in Control of Mosquito Borne Diseases Under Tropical Conditions." The second day's program was largely devoted to a "Review of Literature on Mosquitoes for 1940-1941."

COLORADO

Correction — Refresher Courses. — The Colorado State Medical Society will offer a series of refresher courses in Denver on February 16-18 instead of on February 16-17 as was announced in THE JOURNAL, January 24, page 309.

Midwinter Postgraduate Clinics.—The tenth annual Midwinter Post Graduate Clinics of the Colorado State Medical Society will be held in Denver, February 19-21. Guest speakers will include:

Dr. John A. Toomey, Cleveland, Chemotherapy in Infectious Diseases.
Dr. Harold O. Jones, Chicago, Management of Pelvic Infections.
Dr. Benjamin H. Orndoff, Chicago, Endometriosis: Its Relation to Sterility and Other Conditions of the Female Pelvis.
Dr. Carl M. Peterson, Chicago, Secretary, Council on Industrial Health, American Medical Association, Industrial Health: Progress and Reports.
Dr. Edward H. Hashinger, Kansas City, Mo., Hypothyroidism.
Dr. John Henderson, Philadelphia, Human Plasma: A Review of Its Preparation and Indications in Military and Civil Practice.
Dr. Ozro T. Woods, Dallas, Texas, Care of the Critically Ill Patient.
Dr. Charles B. Huggins, Chicago, Endocrine Relationships in Carcinoma of the Prostate.
Dr. Oliver E. Van Alyea, Chicago, Treatment of the Acute Antrum.
Dr. James S. Speed, Memphis, Tenn., Treatment of Compound Fractures.

In addition there will be a guest speaker from the army medical corps to discuss some subject in military medicine. All guest speakers will conduct clinics. The annual dinner dance will be held Saturday evening at the Shirley-Savoy Hotel.

CONNECTICUT

Meeting on Maternal Care.—Physicians in the Naugatuck Valley and the bureau of child hygiene of the state department of health held a dinner meeting, January 29, to discuss maternal care. The speakers were Dr. Joseph H. Howard, Bridgeport, "Relationship of the State Medical Society to the Public Health Program in Connecticut"; Dr. Stanley H. Osborn, Hartford, "Plan of the State Department of Health for Improving Maternal Care in the State," and Dr. Edwin F. Daily, Washington, D. C., "National Scope of Maternal and Child Health Program." The state health department has recently inaugurated a program in maternal care in the Naugatuck Valley area.

Society News.—The Bridgeport Medical Society devoted its meeting in December to a symposium on peptic ulcer.—— The Norwalk Medical Society was addressed, January 14, by Edward T. Buckingham, LL.B., compensation commissioner of Bridgeport, on "Compensation Medicine." The society was addressed, December 10, by Dr. Paul Reznikoff, New York, on "Importance of White Blood Cell Counts in Disease, Including Infections."——Dr. Herbert F. Traut, New York, presented the results of two and one-half years' study of vaginal smears after the method of Papanicolaou before the Hartford Medical Society on December 15.——Dr. Arthur M. Fishberg, New York, discussed hypertension before the Waterbury Medical Society on December 11. —— The New Haven Medical Association was addressed, January 7, by Dr. Bela Schick, New York, on allergy. —— Dr. Champ Lyons, Boston, discussed chemotherapy before the New London County Medical Association in Norwich on December 4.

DISTRICT OF COLUMBIA

Hospitals Subject to Tax.—According to the Washington *Post*, the Garfield Memorial and George Washington University hospitals, Washington, were returned to taxable status on January 10. The addition of these two hospitals brought the total of such institutions recently returned to tax rolls to nine. The others are Emergency, Casualty, Sibley Memorial, Episcopal, Eye, Ear and Throat, Providence, National Homeopathic and Children's hospitals. The report stated that the board of commissioners ruled that the institutions were not conducted as purely public charities without charge to inmates, and hence were not entitled to tax exemption. It said that the Garfield Hospital has land and buildings assessed at more than a million dollars. The nurses' school of the hospital will continue to enjoy tax exemption because it is an educational institution. The paper stated that, although denying continued tax freedom for the George Washington University Hospital, the commissioners ruled that the adjacent medical school building and its annex should continue on the free list. The hospital received $203,988 in 1940. Despite its description by university officials as a medical school "teaching hospital," this does not, in the opinion of the board, affect its real status as a privately owned and privately conducted hospital.

ILLINOIS

Society News.—Dr. Summer L. S. Koch, Chicago, discussed "Prevention and Care of Infections of the Hand" before the Sangamon County Medical Society in Springfield, December 4. ——Dr. Stephen A. Zieman, Chicago, addressed the St. Clair County Medical Society in East St. Louis, January 8, on "Transversalis Fascia in Its Relationship to the Etiology and Repair of the Inguinal Hernia."

Chicago

The McArthur Lecture.—Dr. Isidor S. Ravdin, George Leib Harrison professor of surgery, University of Pennsylvania School of Medicine, and director of the Harrison Department of Surgical Research at the medical school, Philadelphia, will deliver the eighteenth Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine of Chicago, March 27. His subject will be "A Consideration of Some Problems of Biliary Tract Disease."

Branch Meetings.—The Douglas Park Branch of the Chicago Medical Society was addressed, January 20, by Drs. Russell D. Herrold on "The Sulfa Treatment of Gonorrhea" and Herbert Rattner, "The Five Day Treatment of Early Syphilis." ——Dr. Chauncey C. Maher discussed "Cardiac Arrhythmia" before the Southern Cook County Branch, January 20.—— At a meeting of the Irving Park Branch, January 27, Dr. Italo F. Volini spoke on "Sulfonamides with Special Reference to Pneumonia."——The Jackson Park Branch devoted its meeting, January 15, to a symposium on the sulfonamides. The speakers were Drs. Austin E. Smith, acting secretary, Council on Pharmacy and Chemistry, American Medical Association; Leander W. Riba, and Italo F. Volini.——Dr. Wesley W. Spink, Minneapolis, addressed the Northwest Branch, January 16, on "Present Status of Sulfonamide Therapy" and Dr. Chester C. Guy, "Sulfonamides in Surgery."

INDIANA

Changes in Health Personnel.—Dr. Harold J. Halleck, Winamac, was recently appointed health commissioner for Pulaski County for a term of four years.——Dr. Clifford H. Mayfield, Reynolds, has been reappointed health officer of White County for a four year term beginning January 1.

Physician Imprisoned for Defrauding Township.—Dr. Paul B. Arbogast, Vincennes, was recently sentenced to prison for from two to fourteen years for presenting false claims against the Vincennes township poor fund, it is reported. He was refused a suspended sentence and did not appeal the case. He is said to be serving his sentence.

Society News.—Dr. Joseph R. Crowder, Sullivan, spoke on "X-Ray Studies of the Chest" before the Sullivan County Medical Society in Sullivan, January 7.——The Fort Wayne Medical Society was addressed, January 20, by Dr. Samuel R. Mercer, Fort Wayne, on "Lupus Erythematosus" with presentation of clinical cases.——Drs. Joseph C. Lawrence Jr. and Harold D. Lynch, Evansville, discussed "Management of Acute Anterior Poliomyelitis" at a meeting of the Vanderburgh County Medical Society in Evansville, January 13.——Dr. Carl H. McCaskey, Indianapolis, addressed the Tippecanoe County Medical Society in Lafayette, January 13, on "Infections of the Vestibule of the Nose."——The Fountain-Warren County Medical Society's meeting, January 1, in Kramer was addressed by Dr. Marine R. Warden, Danville, Ill., on "Radiology."—— Dr. Ernest R. Carlo, Fort Wayne, spoke on "Effect of War on Child Health" before the Whitley County Medical Society in Columbia City, January 13.——Dr. Bert E. Ellis, Indianapolis, discussed "Otitis Media and Mastoiditis," January 15, at a meeting of the Henry County Medical Society, Newcastle.

KANSAS

New Director of Local Health Service.—Dr. Henry H. Asher, Wichita, health officer of Sedgwick County for two years, has been appointed director of the division of local health of the state board of health, Topeka. Dr. John W. Turner, Marion, will be the new health officer of Sedgwick County.

Society News.—The Wyandotte County Medical Society was addressed, January 20, by Drs. William H. Algie on "Pneumonia" and Paul M. Krall, Kansas City, "The Sulfa Compounds in Therapeutics."——At a joint dinner meeting of the Kansas Obstetrical and Gynecological Society and the Sedgwick County Medical Society in Wichita, January 6, Dr. Willard M. Allen, St. Louis, spoke on "Clinical Use of Sex Hormones." Preceding this meeting Dr. Allen discussed "Significance of Abnormal Vaginal Bleeding."

LOUISIANA

Dr. Musser Resigns as President of State Board of Health.—Dr. John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans, has resigned as president of the state board of health, effective February 1, newspapers report, because his full time service would be required at the Tulane University Medical School. Gov. Sam H. Jones appointed Dr. Christopher L. Mengis, health officer of Iberia Parish health unit, New Iberia, as president of the state board. Early in 1941 Dr. Musser was in charge of a reorganization of the state board of health. Dr. Robert H. Onstott, U. S. Public Health Service, New Orleans, is executive officer of the board and Dr. Ford S. Williams, New Orleans, assistant state health officer. Dr. Mengis is a native of Vicksburg, Miss., graduating at Tulane in 1900. He has been connected with the state department of health since 1936, newspapers report, serving at one time as head of the division for crippled children.

MARYLAND

Personal.—Dr. Charles Reid Edwards, professor of clinical surgery, University of Maryland School of Medicine, Baltimore, has been appointed chief of emergency medical service for Maryland; the appointment was made on a recommendation by the Medical and Chirurgical Faculty of Maryland.

De Lamar Lectures.—The Johns Hopkins University School of Hygiene and Public Health, Baltimore, sponsored the following De Lamar Lectures: Dr. Karl F. Meyer, professor of bacteriology, and director, George Williams Hooper Foundation, University of California Medical School, San Francisco, "The Ecology of Plague," December 9, "The Ecology of Psittacosis," December 10 and Dr. Lowell T. Coggeshall, professor of epidemiology, School of Public Health, University of Michigan, Ann Arbor, "Immunity in Malaria," December 16.

MICHIGAN

Personal.—Dr. Clarence P. Lathrop, Hastings, was guest of honor at a meeting of the Barry County Medical Society, December 11, in recognition of his completion of fifty years in the practice of medicine.——Dr. and Mrs. Byron E. Burnell, Flint, observed their fiftieth wedding anniversary, December 30, with a reception to their friends. Dr. Burnell, who has been practicing in Flint since 1901, is a past president of the Genesee County Medical Society.

County Secretaries' Conference.—The Michigan State Medical Society conducted its annual county secretaries' conference at the Olds Hotel, Lansing, January 25. The speakers were:

Dr. Andrew S. Brunk, Detroit, Progress Report on Michigan Medical Service.
Hazen J. Payette, LL.B., Detroit, Physician's Income Tax.
L. A. Potter, Lansing, Unity.
Earl W. Munshaw, LL.B., Grand Rapids, Michigan's Intangible Tax Law.
Mr. M. C. Smith, Lincoln, Neb., Design for a Statewide FSA Medical Program.
Arthur A. Holmes, major, U. S. Army, Medical Procurement and Assignment.
Don Leonard, Lansing, captain, Michigan State Police, England's Civilian Defense—An Eyewitness Account.
Dr. Harold A. Furlong, Lansing, Emergency Medical Service in Community Defense.

New Director of Mental Hygiene.—Dr. Frank F. Tallman, clinical director of the Rockland State Hospital, Orangeburg, N. Y., has been appointed director of mental hygiene of the Michigan State Hospital Commission, Lansing. Dr. Tallman will have charge of the organization, supervision and coordination of the state child guidance clinic system; the establishment of an outplacement (boarding and colony) program; coordination and expansion of the hospital outpatient clinics in collaboration with the medical superintendents, with especial attention as to the preventive and parole aspects, and the development of an integrated statewide educational mental hygiene program. The state hospital commission is a seven member board charged with the responsibility of supervising and directing the state mental hospitals and of carrying on a program of prevention of mental illness. It is a separate and distinct agency of state government not connected with the state department of health, the department of public welfare or any other agency. Charles F. Wagg, Lansing, as the executive secretary of the commission, carries out its functions with respect to state hospitals. Dr. Tallman will direct the activities in the field of prevention. He graduated at the University of Alberta Faculty of Medicine, Edmonton, in 1927.

NEW JERSEY

Annual Meeting of Surgeons.—The Society of Surgeons of New Jersey held its annual meeting in Trenton, January 28. Rev. Alphonse M. Schwitalla, S.J., dean of St. Louis University School of Medicine, St. Louis, was the speaker in the evening.

Society News.—Dr. Zacharias Bercovitz, New York, addressed the Bergen County Medical Society, January 13, on "Diagnosis and Treatment of Disorders of the Intestine."—— The Morris County Medical Society was addressed in Morris Plains, January 15, by Dr. William Goldring, New York, on "Diagnosis and Treatment of Nephritis and Hypertension."—— Dr. Tracy J. Putnam, New York, discussed "Epilepsy: Its Nature and Treatment" before the Atlantic County Medical Society on December 12.

NEW YORK

Graduate Courses.—January 20 marked the opening of a course in sulfonamide therapy, arranged by the state medical society and the state department of health for the Oneida County Medical Society at the Utica State Hospital, Utica. The series follows:

Drs. David D. Rutstein, Albany, Behavior of Sulfonamides in the Body and Principles for Their Use, and Joseph Ernest Del Monico, Syracuse, Local and Internal Use of Sulfonamides in Surgery, January 20.
Drs. Thomas F. Laurie, Syracuse, Treatment of Genitourinary Infections in the Male, and Ferdinand J. Schoeneck, Syracuse, Sulfonamides in Obstetrics and Gynecology, January 27.
Drs. Joseph J. Bunim, Brooklyn, Treatment of Pneumonia, and Abraham Clement Silverman, Syracuse, Treatment of Meningitis, February 3.

A course in general medicine opened on February 3 for the Madison County Medical Society at the Hotel Oneida, Oneida. Dr. Eugene R. Marzullo, Brooklyn, spoke on "Practical Considerations of Blood Dyscrasias." On February 10 Dr. Milton B. Handelsman, Brooklyn, will discuss "Diabetes: Its Modern Interpretation and Treatment," and on February 17 Dr. Albert F. R. Andresen, Brooklyn, "Treatment of Gallbladder Disease." The state society and the state health department cooperated with the Onondaga County Medical Society in Syracuse in the following course:

Drs. Karl Jefferson Thomson, Mount McGregor, Behavior of Sulfonamides in the Body and Principles for Their Use, and Frank L. Meleney, New York, Local and Internal Use of Sulfonamides in Surgery, January 15.
Drs. Rolla R. Wolcott, passed assistant surgeon, U. S. Public Health Service, U. S. Marine Hospital, Staten Island, Treatment of Genitourinary Infections in the Male, and Charles H. Peckham Jr., Cooperstown, Sulfonamides in Obstetrics and Gynecology, January 22.
Drs. Norman H. Plummer, New York, Treatment of Pneumonia and Meningitis, and Frank Glenn and Harry Backwin, Panel Discussion, January 29.

New York City

Motion Picture on Treponema Pallidum.—Theodor Rosebury, D.D.S., assistant professor of bacteriology, Columbia University College of Physicians and Surgeons, showed a sound motion picture on Treponema pallidum at the New York Academy of Medicine February 3. Dentists, physicians, nurses and medical students were invited to attend.

Conference on Radiology.—The Eastern Conference of Radiologists was held at the Hotel Biltmore on January 23-24. Included among the speakers were:

Dr. Raymond L. Pfeiffer, Roentgenography of Exophthalmos.
Dr. Alexander B. Gutman, Biochemical Aids to Roentgenologic Problems in the Differential Diagnosis of Bone Disease.
Dr. Arthur F. Hunter, Roentgen Therapy of Keloids.
Dr. William E. Howes, Brooklyn, Lymphosarcoma in Children.
Dr. Harold Neuhof, Circumscribed Mediastinal Neoplasms.
Dr. John M. Kenney, Radioactive Phosphorus as a Therapeutic Agent in Malignant Neoplastic Disease.
Dr. Cornelius P. Rhoads, Recent Studies in the Production of Cancer by Chemical Compounds.

Medical Bureau for Education Board Reorganized.—The medical division of the city's board of education has been reorganized to include a chief medical examiner and a part time psychiatrist. The action was approved at a meeting of the board on January 14. In addition there will be six part time medical examiners, a medical inspector aurist, a laboratory technician and a registered nurse, and a panel of psychiatrists. According to the New York *Times* the board appointed a committee to study the reorganization, at which time Dr. Emil Altman had been chief examiner. Since his retirement several months ago Dr. John E. Conboy has been acting chief examiner. The reorganization follows closely recommendations made by the New York Academy of Medicine, it was stated.

Hospital Services Increase Benefits.—The Associated Hospital Service has announced added benefits under its Three Cents a Day Plan, representing an annual increase of about $1,000,000 in payments to hospitals. The discount allowance of 25 per cent of the hospital's regular charges for semiprivate service, which has heretofore been granted after the initial twenty-one day period of full hospital service in any contract year, is increased to 50 per cent and extended to ninety days in any contract year. In maternity cases and conditions arising out of and during pregnancy the present credit of $5 a day for a period of ten days will be increased to $6 a day. The service also announced that $1,500,000 has been set aside by the board of directors as a reserve to meet epidemic or war emergency demands. The plan's defense policy of continuing the enrolment privileges of men in the armed forces for whom medical care is temporarily the obligation of the federal government now applies to six thousand contracts. Under this policy, subscription charges are discontinued for single men and reduced for married men who wish to continue the protection of their families.

OHIO

Photographs of Physicians.—The families of the late Drs. Edwin M. Huston and Clement D. Smith, Dayton, have presented pictures of the physicians to the Montgomery County Medical Society, Dayton. Both physicians are past presidents of the society, which has a collection of pictures of all its former presidents. Dr. Huston was at one time president of the Ohio State Medical Society.

Director of Venereal Disease Control.—Dr. Harold J. Gordon, who has for a number of years been in charge of the venereal disease program of the Akron health department, has been appointed venereal disease control officer of the state department of health. At the time of his recent appointment Dr. Gordon was editor of the bulletin of the Summit County Medical Society and chairman of the committee on medical preparedness. He is a retired major of the army and was awarded the distinguished service cross for service overseas during World War I.

OKLAHOMA

"Your Health and You."—The Town Club of Oklahoma City is presenting a series of free health talks, with the approval of the Oklahoma County Medical Association, to acquaint the public with the best methods of prevention of disease and the promotion of health. All the speakers are from Oklahoma City:

Dr. John Walker Morledge, Health Problems Today and Tomorrow, November 5.
Dr. Charles P. Bondurant, What You Should Know About Cancer, December 3.
Dr. James Floyd Moorman, Colds, Influenza and Pneumonia, January 7.
Dr. Bert E. Mulvey, Heart Disease: Its Prevention and Care, February 4.
Dr. C. J. Fishman, The Brain in Health and Disease, March 4.
Dr. Bert F. Keltz, Your Weight and How to Control It, April 1.
A. C. Seids, D.D.S., These Teeth of Mine, May 5.
Richard H. Graham, Medicine on the March, June 3.

PENNSYLVANIA

Society News.—The Westmoreland County Medical Society devoted its meeting in Latrobe, February 3, to a symposium on treatment of compound fractures of the extremities; the speakers were Drs. Jack H. Hamill, Latrobe; William J. Potts, Richard S. Cole and Dennis R. Murdoch, all of Greensburg; Anthony L. Cervino, Jeannette, and Robert C. Johnston, New Kensington.

Philadelphia

Popular Science Talks.—"Science in War" is the theme of a series of seven lectures which opened on February 4 at the Philadelphia College of Pharmacy and Science with a talk by Ivor Griffith, Ph.M., entitled Health and the War. Other speakers will be:

Donald P. LeGalley, Ph.D., Physics in the War, February 11.
Freeman P. Stroup, Ph.M., Conservation, February 18.
Arthur Osol, Ph.D., Chemistry in the War, February 25.
George Rosengarten, Ph.D., Signals and Detectors, March 4.
Linwood F. Tice, M.Sc., Life Saving Medicines, March 11.
Louis Gershenfeld, Pharm.M., Bacteria and the War, March 18.

Pittsburgh

Society News.—The Allegheny County Medical Society was addressed in Pittsburgh, January 20, among others, by Dr. James S. Taylor, Altoona, on "Maternal and Fetal Mortality." A symposium on pneumonia constituted the meeting of the society, December 16; the speakers were Drs. William W. G. Maclachlan, John F. McCullough, George J. Kastlin, Pittsburgh, and Harrison F. Flippin, Philadelphia.—— Dr. Samuel M. Dupertuis, among others, addressed the Pittsburgh Pediatric Society, December 19, on "Field of Plastic Surgery in Children."——Dr. Walter S. Nettrour, among others, discussed "Congenital Bronchoesophageal Fistula with a Case Report" before the Pittsburgh Surgical Society, January 16.

TENNESSEE

Health Units Merge.—The Memphis and Shelby County health departments recently consolidated with Dr. Lloyd M. Graves, Memphis, as the director. It was reported that the action was taken to reduce the city's budget. A contract was signed under which the county agreed to pay all expenses of the health service, it was stated.

Lectures at Meharry by Haven Emerson.—Dr. Haven Emerson, for many years professor of public health administration and director of the Institute for Public Health, Columbia University College of Physicians and Surgeons, New York, delivered a series of public lectures at Meharry Medical College, Nashville, December 2-3. His subjects were "Administrative Medicine for Care of the Sick and Public Health," "Natural History of Diphtheria in New York City from Its First Appearance to Date," "Alcohol as a Public Health Problem" and "Diabetes as a Problem of Preventive Medicine."

Society News.—Dr. Carrington Harrison, Nashville, discussed "Late Results in Treatment of Perforated Peptic Ulcer" before the Davidson County Medical Society in Nashville, January 13.——The McMinn County Medical Society was recently addressed in Athens by Dr. William S. Muse, Knoxville, on "Kidney Complications Following the Use of Sulfanilamide and Its Derivatives."——The Washington, Carter and Unicoi Counties Medical Society was addressed in Johnson City, December 4, by Dr. Milton Smith Lewis, Nashville, Tenn., on "Management of the Occipitoposterior Position with Report of 1,392 Collected Cases."

GENERAL

Infantile Paralysis Fund Aids Soldiers' and Sailors' Dependents.—Chapters of the National Foundation for Infantile Paralysis will put the money received by them this year from the President's Birthday Celebration to a new use. In accordance with an agreement between President Roosevelt and the national foundation a part of the funds received by the chapters will be used wherever necessary to assist the dependents of any man in the military or naval service of the United States who becomes a victim of infantile paralysis while in the service. The foundation will issue regulations authorizing this expanded defense activity of the chapters.

American Orthopsychiatric Association.—The nineteenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Detroit, February 19-21. One general session will be devoted to "Research in Child and Youth as Defense Effort." There will be round table discussions on "Orthopsychiatry and the National Defense," "College Mental Hygiene," "The Provision of Psychiatric Services to Rural Areas," "Psychoanalytic Orientation in Family Casework" and "Present Day Trends in the Functions of the Clinical Psychologist." A special section meeting will be held on "Orthopsychiatry and the Profession of Education."

Special Society Elections.—Dr. Willis D. Gatch, Indianapolis, was elected president of the Western Surgical Association at its recent annual meeting in St. Paul. Other officers included Drs. Elmer M. Jones, St. Paul, and E. Eric Larson, Los Angeles, vice presidents; Arthur R. Metz, Chicago, secretary, and Verne C. Hunt, Los Angeles, treasurer. The next annual meeting will be held in Memphis in December.——The American Society of Anesthetists chose the following officers among others at its annual meeting December 11: Drs. Wesley Bourne, Westmount, Que., Canada, president; Frederick A. D. Alexander, Albany, N. Y., Urban H. Eversole, Boston, Hubert R. Hathaway, San Francisco, vice presidents, and Paul M. Wood, New York, secretary.

Schering Corporation Officials Suspended.—As a step toward "smashing completely a long range German scheme to control an important segment of the pharmaceutical market in the western hemisphere," the U. S. Treasury announced on January 29 that it had suspended President Julius Weltzien and seven other officials of the Schering corporation of Bloomfield, N. J., manufacturers of various medicines essential to the war effort, the Chicago Daily *Tribune* reported. Schering corporation is a subsidiary of Schering A. G. of Berlin, Germany. Production has been under treasury supervision since the Japanese attack on Pearl Harbor, the *Tribune* stated. The eight company officials were barred from the Schering premises, their personal accounts were blocked, and employees of the company were forbidden to communicate with them.

Examinations in Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology announces that the general oral and pathologic examinations (part 2) for all candidates (groups A and B) will be conducted at Atlantic City, N. J., by the entire board from Wednesday June 3 through Tuesday June 9, 1942 prior to the opening of the annual meeting of the American Medical Association. Application for admission to group A, part 2, examinations must be on file in the secretary's office not later than March 1. It will greatly facilitate the work of the board if applications are filed as far as possible in advance of the closing date for their receipt. Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates. Candidates for reexamination in part 2 must make written application to the secretary's office before April 15. Dr. Paul Titus is secretary of the board, 1015 Highland Building, Pittsburgh.

Certification of Proctologists.—The National Proctologic Certification Committee has been established under the sponsorship of the Section on Gastro-Enterology and Proctology of the American Medical Association, the Section on Proctology of the Southern Medical Association, the American Proctologic Society and the Mid-West Proctologic Society. Representatives from each group will serve overlapping four year terms on the committee, which is currently made up of Drs. Louis J. Hirschman, Detroit, chairman; Walter A. Fansler, Minneapolis, vice chairman; Louis A. Buie, Rochester, Minn.; Edward G. Martin, Detroit; Descum C. McKenney, Buffalo; Marion C. Pruitt, Atlanta, Ga.; Frank G. Runyeon, Reading, Pa.; Frank C. Yeomans, New York, and Curtice Rosser, Dallas, Texas, secretary. The new committee will cooperate with the American Board of Surgery in passing on the qualifications of applicants who desire certification in proctology and will have charge of that portion of the examination of these applicants covering the diseases and surgery of the colon, rectum and anus. A Founders' Group has been instituted, composed primarily of those who have practiced proctology for fifteen years or who are professors or assistant professors of proctology. The preliminary group was nominated by the original American Board of Proctology, which was responsible for the creation of the new certification committee and was subject to a veto of the American Board of Surgery. Additions to this group will be made until Jan. 1, 1944. Additional information may be obtained from Dr. John Stewart Rodman, secretary of the American Board of Surgery, 225 West Fifteenth Street, Philadelphia..

Annual Report of Commonwealth Fund.—The Commonwealth Fund reported January 19 that it had expended $1,841,332.46 in the year ended Sept. 30, 1941 for purposes associated with the "welfare of mankind." Of this total more than $262,000 was appropriated for public health activities in Oklahoma, Tennessee, Mississippi, Alabama and Massachusetts. Mental hygiene activities in the United States and England received $156,820. Special grants totaling $366,712 went to medical research projects in various universities, medical schools and hospitals, the largest appropriation of $111,177 going to a study of arthritis at Harvard Medical School, and the second largest, $42,000, to research in the function of the kidney at the University of Pennsylvania School of Medicine, Philadelphia. This project has been suspended because Dr. Alfred Newton Richards and his principal research associate, Dr. Arthur M. Walker, have been called to serve with the Committee on Medical Research in the Office of Scientific Research and Development. Other subjects covered by the fund's miscellaneous grants included air borne infection, bacterial nutritive requirements, chemical factors involved in resistance to disease, relation of endocrines to growth and development, mechanism of heart failure, immunology, influenza bacillus, chronic nephritis, peripheral circulation, pneumonia, poliomyelitis, respiratory physiology, rheumatic fever, the streptococcus, the vaginal smear as a diagnostic method and the etiology of vascular disease.

The fund gave support in twenty-eight states and in Great Britain. Of thirty-eight separate projects aided by the fund only three were new, two in New York and one in Chicago. In New York these were a clinical statistical review of a series of cases of essential hypertension at the Columbia-Presbyterian Medical Center and a study of gynecologic diagnostic methods at Cornell University Medical School. The Chicago project is a study of cancer producing substances from human tissues at the University of Chicago. At five schools of medicine the fund subsidized departments of preventive medicine, and special provision was made for the expansion of this department at Tulane University of Louisiana School of Medicine, New Orleans. The department of psychiatry at the University of Louisville was subsidized, and at four medical schools the fund helped to meet the cost of borderline services designed to link the departments of psychiatry and pediatrics. A grant was made to the Peter Bent Brigham Hospital in Boston to enlarge a psychiatric service forming part of the department of medicine. No new hospital award was made

during the year, but a community hospital at Pittsfield, Ill., was completed and one at Mount Pleasant, Mich., was begun. The capacity of a hospital at Kingsport, Tenn., was doubled, the cost being divided between the fund and the community. The twelve hospitals already in service under this program were used almost to normal working capacity, and their earned income rose faster than their operating expenses, according to the report.

Since the war began the fund has set aside $685,000 for war relief and related activities. Direct gifts have been made to the British War Relief Society, the United China Relief, the Greek War Relief Association, the American Field Service, the American Friends Service Committee, the United Service Organizations and the American Red Cross. It has contributed to the Harvard-Red Cross Epidemiological Unit, now operating a hospital and field service for communicable disease control in England, and to the American Hospital in Britain.

CANADA

New Division of Nutrition.—The Department of Pensions and National Health of Canada has established a division of nutrition with Lionel B. Pett, Ph.D., Edmonton, Alta., as director. Miss Marion Harlow, Montreal, is assistant director. According to the *Canadian Public Health Journal* the new division has a limited budget and it will be necessary to secure the cooperation of all existing agencies to undertake a national program of nutrition education.

Graduate Course in Therapeutics.—A postgraduate course in therapeutics will be held by the University of Manitoba Faculty of Medicine, Winnipeg, February 11-13. Guest speakers will be Drs. Cecil J. Watson, professor of internal medicine, University of Minnesota Medical School, Minneapolis, and William F. Gillespie, professor of surgery, University of Alberta Faculty of Medicine, Edmonton. On February 13 Dr. Gillespie will address a meeting of the Winnipeg Medical Society on "Physiological Principles in the Repair of Inguinal Hernia," and Dr. Watson, "Some Physiological and Clinical Aspects of Jaundice."

LATIN AMERICA

Scientific Conference in Mexico.—An Inter-American Scientific Conference will be held in Mexico, February 15-26, as a part of the dedication of the new National Astrophysical Observatory. Most of the sessions and lectures will be held at Puebla, including the dedicatory exercises on the morning of February 17. Dedicatory addresses will be given by President Manuel Avila Camacho and the governor of Puebla. For special academic ceremonies an excursion will be made to Morelia on February 23 and 24, with the final sessions being held in Mexico City. The new observatory is situated on land provided by the government of the state of Puebla, near a small town of Aztec origin called Tonanzintla, about 80 miles east of Mexico City.

Argentine Clinic to Be Center for Cyclotron Products.—The Instituto de Radiologia de Fisioterapia Medica del Hospital de Clinicas in Buenos Aires, Argentina, will be the permanently established center at which treatment with the cyclotron products may be had in South America, according to the University of California *Clip Sheet*. The first shipment of radioactive phosphorus has been sent to the institute by the University of California Radiation Laboratory, Berkeley, and it is intended to send a shipment of 10 millicuries by Pan American Airways every two weeks. Previously a few shipments were sent to Lima, Peru, but these were not regular, the *Clip Sheet* stated. Radioactive phosphorus retains its radium-like qualities for fourteen days, after which it is not active enough to be useful. The shipments arrive in Buenos Aires in about two or three days and are thus useful for more than ten days. The cyclotron product has been found beneficial in the treatment of leukemia.

CORRECTIONS

Finlay Institute of the Americas.—In the current comment on the Finlay Institute of the Americas in THE JOURNAL, January 17, page 230, the name of Morton Kahn, a member of the Scientific Advisory Committee, was inadvertently omitted.

Alwin Pappenheimer Jr. Receives Lilly Award.—THE JOURNAL, January 24, page 310, reported that the Eli Lilly Award of $1,000 and a bronze medal, presented during the meeting of the Society of American Bacteriologists in Baltimore, December 30, had been given Dr. Alwin M. Pappenheimer, professor of pathology, Columbia University College of Physicians and Surgeons. THE JOURNAL should have reported that this award is given to a scientist under 35 years of age. This year it went to Alwin M. Pappenheimer Jr., Ph.D., assistant professor of bacteriology, New York University College of Medicine, New York, for his work in developing a new science combining bacteriology, chemistry, physics and nutrition in the treatment of disease.

Government Services

Positions Open Soon in Panama Canal Service

The U. S. Civil Service Commission expects to begin accepting applications on February 16 for physician positions in the Panama Canal Service. The formal announcement which will be issued on that date will give details as to the training, age, physical and other requirements. Copies will be obtainable, with the application forms, at any first or second class post office, or by writing to the Civil Service Commission, Washington, D. C., after February 16. These positions pay about $4,000 a year. The duties are described as follows:

> To serve as district physician in a small government dispensary; as such to have general supervision over all medical and surgical activities in the dispensary; to operate a general medical and surgical clinic, to examine and vaccinate school children; to examine new employees of the Panama Canal to determine their fitness for entering the service; to attend emergency injury cases; to visit patients day or night; to diagnose cases and treat patients in their homes and on board ships, and to be in charge of business activities of dispensary such as ordering of supplies, care and upkeep of buildings and equipment, and accountability for property and cash.

Doctors are urged to keep this notice in mind and apply for further details after February 16.

Examination for Appointment in Public Health Service

The U. S. Public Health Service announces an examination to establish eligibility for appointment in the commissioned corps of the service in the grade of assistant surgeon (medical only). Applicants must not have passed their thirty-second birthday on the date the examination is taken, must be citizens of the United States, must be graduates of an approved medical college and must have completed or will complete by July 1 next at least one year of internship or its equivalent. The compensation of officers in the grade of assistant surgeon, both Regular and Reserve Corps, is $3,158 a year with dependents and $2,699 a year without dependents.

The board of examiners will be in the following places at 9 a. m. on the dates specified. Candidates should arrange to have their physical examinations completed and prepare their autobiographies at any one of the following listed places just prior to the date shown:

U. S. Marine Hospital, Boston	February 9
U. S. Marine Hospital, Staten Island, N. Y.	February 10
U. S. Marine Hospital, Baltimore	February 12
U. S. Marine Hospital, Norfolk, Va.	February 13
U. S. Marine Hospital, Cleveland	February 16
U. S. Marine Hospital, Louisville, Ky	February 17
U. S. Public Health Service, Washington, D. C.	February 20
U. S. Marine Hospital, Chicago	February 23
218 Federal Office Building, Minneapolis	February 24
U. S. Marine Hospital, Seattle	March 2
U. S. Marine Hospital, San Francisco	March 6
U. S. P. H. S. Relief Station, 424 Federal Bldg., Los Angeles	March 9
Colorado Psychopathic Hospital, Denver	March 11
U. S. Marine Hospital, Kirkwood, Mo.	March 13
U. S. P. H. S. Hospital, Fort Worth, Texas	March 27
U. S. Marine Hospital, New Orleans	March 30
Liaison Office, U. S. P. H. S., Room 319 Grant Bldg., Atlanta, Ga.	March 31

Those persons who complete the physical examination and certain other portions of the examination consuming from one to three days will be permitted to participate later in the written examination beginning on April 7, either at the place where the physical examination was conducted or at some other nearer point. The written and clinical portions of the examination will consume about five days. Any travel expenses to be incurred must be defrayed by the applicants. Applicants may obtain application blanks by writing to the Surgeon General, U. S. Public Health Service, Washington, D. C. These forms may be filled out and delivered personally to the board of examiners, or blanks may be had from the board at the time the applicant appears for examination. Applicants will be required to present their diplomas and evidence of United States citizenship, to the board. If naturalized, naturalization certificate should be presented to the board. Candidates born in the United States who pass the entire examination will be required to prove citizenship before being offered appointment. National Board diplomates are required to present their certificates to the board.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 20, 1941.

The British Population Problem

All over the world today there is a population problem. In the more backward countries the birth rate is too high for general prosperity, while in the more advanced countries it is not high enough to maintain the population. In an address to the Devonshire club the duke of Devonshire, undersecretary of state for India, took for his subject "Empire." One of the difficulties arising from the war was the populating of the empire. The day must come, and in the not very distant future, when, in spite of the considerable increase in the duration of life, the British population would begin to shrink rapidly. We needed a birth rate of 19.5 per thousand but had at present one of only 16. The dominions were also faced with the problem of a diminishing population in the near future. When they had a vastly larger population the peace of the world would be secure. He suggested that the dominion governments might investigate the possibility of increasing their populations by admitting the peoples of northern countries, such as Denmark, Sweden and Norway, who to a large extent shared our views and were of the same blood.

War Nurseries

A feature in this war, as of the last, is the extensive use of female labor both directly in the war effort, as in munition work and in auxiliary services to the fighting forces, and indirectly in releasing men by performing work which in peace time is done solely by them, such as that of bus and street car conductors and railway porters. At present there is an urgent call for more women in the war industries, particularly for strong young women with recent industrial experience. But many such women are mothers of young children and cannot be expected to do work efficiently, or even at all, unless assured that their children are being well cared for during their absence from home. Not unmindful of this, the Ministry of Labor has established nurseries for the children of war workers. In June last this provision was expanded; the government took full financial responsibility for the nurseries, which were opened to the children of all women in full time employment. Their administration was placed in the hands of a joint staff of the Ministry of Health and the Board of Education, the local authority responsible being the Maternity and Child Welfare Authority. The difficulty of establishing these nurseries in the numbers they are required is now pressing.

Concession to Alien Physicians

Mainly to meet the case of Jewish physicians, who were penalized by the Germans, a new defense regulation has been made which provides that a foreign physician who has passed the necessary examinations for a foreign diploma but was debarred from practice in his own country by racial legislation may be given temporary registration in Britain. Before this it was necessary for a foreign physician to hold a diploma before he could be registered and so become legally entitled to practice. Another change is that an alien or oversea physician who fulfils the other prescribed conditions may now be employed in private practice as an assistant to a physician on the permanent register. Any physician who does not possess any United Kingdom qualification may be registered for the period of the war if he satisfies the General Medical Council that he is of good character, holds a medical diploma recognized as sufficient by the council and has been selected for employment as a medical officer in an approved hospital, institution or service, or as assistant to a physician on the permanent register.

Apart from American physicians, who are dealt with under a special order, four hundred and seventy alien physicians are employed in the service of this country. Of these three hundred and eighty-five are employed in hospitals, thirty-three in public health appointments and fifty-two as ship surgeons or in other miscellaneous posts. In addition twenty-four have received commissions in our fighting forces, apart from those serving in the allied forces.

PARIS

(From Our Regular Correspondent)

Dec. 1, 1941.

The Food Problem

The food provided in the different departments of France is unequal, although there is a uniform ration card. Some not rationed foods are still to be found in some departments. The supply, however, has diminished, and on account of the war these districts do not have enough food for their own requirements. On the other hand, the providing of food for the cities is aggravated by transport difficulties due to the shortage of coal and gasoline. On the whole, people living in the open country are better provided for than are the people in the cities, just as it was in the the last war. The government of Vichy is trying to organize the distribution of food by means of special commissions and is endeavoring to accumulate stocks for the coming winter. Price regulation for all products has been adopted.

THE RATION CARD FOR OCTOBER AND NOVEMBER

In October and November the following rations were granted: 275 Gm. (9 ounces) of bread a day for an adult. A weekly meat ration with bones ought to have amounted to 250 Gm. (8¾ ounces) but actually amounted to only 100 to 200 Gm. (3½ to 7 ounces). The sugar ration was 125 Gm. (4 ounces) a week, the cheese ration 55 Gm. (nearly 2 ounces), the fat ration 110 Gm. (3⅘ ounces), which means 55 Gm. less than in September. This fat ration included only 25 Gm. (⅞ ounce) of butter for the whole month. Sixty Gm. (2 ounces) of nutritious paste a week were granted and 1 Kg. (2⅕ pounds) of potatoes. The coffee ration amounted to 60 Gm. a month.

Laborers got a bread supplement of 75 Gm. (2½ ounces) a day, a weekly meat supplement of 100 to 225 Gm. (3½ to 8 ounces) and a fat supplement of 75 to 150 Gm. (2½ to 5 ounces) a week.

The daily bread ration for children up to 3 years of age is 100 Gm. (3½ ounces), for children between 3 and 6 years 200 Gm. (7 ounces), between 6 and 13 years 275 Gm. (9½ ounces) and between 13 and 21 years 350 Gm. (12 ounces). Children up to 3 years of age get 50 Gm. (1⅝ ounces) of rice a week and a sugar ration of 250 Gm. (8¾ ounces) instead of 125 Gm. (4 ounces) a week. The daily milk ration amounts to 0.5 liter (1 pint) for children between 3 and 7 years and 0.25 liter (½ pint) for children between 7 and 14 years of age. Besides, children up to 6 years are getting 125 Gm. (one-fourth pound) of chocolate a month, children and young people between 6 and 21 years 250 Gm. (one-half pound). Children and adolescents up to 21 do not get any coffee.

Inquiries into the physiologic value of this feeding have been made in comparison with the minimum necessary for the organism. Of importance is the research work of Mrs. Randoin, an authority on the physiology of nutrition and director of the Laboratoire de Physiologie de la nutrition at the Ecole des hautes études and of the Institut supérieur de l'alimentation. This work was done by means of exact laboratory experiments as to the value and the composition of different elements and with many inquiries carried on in the various districts of France. These institutes endeavor to do scientific research work and

also to solve purely practical problems regarding the substances indispensable for the body in order to supply them in the inadequate diet. The results of these inquiries have been discussed in meetings at the Académie de médecine, which has created a special Commission du rationnement alimentaire to study these problems thoroughly.

THE PHYSIOLOGIC VALUE OF THE FOOD RATION

The ration, which has remained stationary for a year in spite of slight alterations, has proved insufficient. The ration grants 1,225 calories a day, about half of the normal requirement of calories the average active person ought to have. Everybody must try to supply additional calories by providing himself with other food from the not rationed food market. In the daily ration are 220 Gm. of carbohydrate instead of the norm of 450 Gm. and 12 Gm. of animal albumin instead of the minimum of 30 Gm. That is why the ration does not contain a large part of the indispensable amino acids: leucine, isoleuchine, phenylalanine, tryptophan, lysine and histidine, substances that the body cannot itself produce. These amino acids exist in the right ratio in animal and not in vegetable proteins; in the ration their proportion to one another is to the disadvantage of the animal proteins. Twenty-one Gm. of lipids of animal and vegetable origin is contained in the daily food ration, which is only about half of the strictly necessary daily minimum of 40 Gm. A great deal of the indispensable fatty acids is missing in the ration, for instance linoleic and linolenic acid, as well as a certain amount of vitamin E, which is derived from vegetable fats. At the same time much of the oil soluble vitamins A and D is missing, as well as a further amount of the vitamin E that animal lipids include, especially butter and other milk derivatives. Only a small quantity of them are contained in the ration. This feeding causes, on the other hand, an acid surplus in the body on account of the preponderance of acid residues over base residues.

CALCIUM DEFICIENCY IN THE DIET

At a meeting of the Académie de médecine Mrs. Randoin and Mr. Richet recently discussed calcium deficiency in the feeding of young people. A calcium shortage was found present before the war by means of research done by Mrs. Randoin in 1937 and 1938. In the meantime the deficiency has been increasing as the result of inadequate feeding.

Calcium Requirement and Deficiency

Age	Strictly Necessary Minimum of Calcium, Mg.	Supplied by Normal Food, Mg.	Contained in the Actual Food Ration, Mg.	Deficit, per Cent
5	210	693	1,044	..
6	217	716	444	38
8	277	914	444	51
10	276	910	444	51
12	335	1,105	444	60
14	410	1,350	141	89
18	550	1,875	141	92
20	450	1,485	141	90
30	450	1,485	141	90
Pregnant woman	900	2,970	793	73.2

The rationed food is extremely poor in all minerals and especially in calcium. Two thirds of the necessary phosphorus, two thirds of the magnesium, three fourths of potassium and six sevenths of calcium are missing in the food of young people. The ration is supplying only 0.18 Gm. of calcium a day instead of 1.30 Gm., which an adolescent ought to get in his food. The phosphorus amounts to 0.52 Gm. a day instead of 1.45 Gm. The proportion of calcium to phosphorus amounts to 0.34 instead of the normal ratio of 0.9. The calcium phosphorus ratio for adults has also been displaced from the normal.

In their remarkable book Carence calcique et régime alimentaire (Calcium Deficiency and Alimentary Regimen), published this year, H. and M. Hinglais, directors of the laboratory at the Faculté de médecine, give figures comparing the calcium requirement of the organism, its amount in a well balanced ration and that in the actual food ration.

It has been stated that calcium taken in any form is assimilated by the body in the ratio of 50 per cent during the first year and 25 to 30 per cent at all other ages. This table shows that the actual food ration offers a sufficient amount of calcium only up to the age of 6 years.

Vitamin D

Age	Strictly Necessary Minimum, International Units	Supplied by the Actual Food	Deficit, per Cent
1	400	25	93.7
5	400	25	93.7
6	400	7	98.2
13	400	7	98.2
14	400	9	97.7
18	400	9	95.5
30	200	9	97
Pregnant woman	800	24	97

To activate the calcium, a sufficient amount of vitamin D is needed. The authors give instructive figures comparing the vitamin D requirement of the body and its supply in actual food.

Children up to the age of 6, who alone have enough calcium in the actual food, are getting the same amount of vitamin D as the other ages, only in an extremely inconsiderable amount; as a result the sufficient amount of calcium cannot be assimilated in the body. The consequences of these deficiences have already been observed. In the Société médicale des Hôpitaux de Paris Mrs. Pierre Bourgeois reports that tuberculosis among children is increasing. Mrs. Randoin proposed at a meeting of the Académie de médecine the medicinal administration of calcium in the best assimilable form of an organic salt in a daily dosage of 1 Gm. as well as the administration of the amount of vitamin D necessary for its assimilation. This proposal was approved by the Académie.

VITAMINS IN THE RATION

The actual food ration is extremely poor in vitamins. As Mrs. Randoin states, the ration contains only one third to one fourth of the amount included in normal feeding, and several diseases due to vitamin deficiency have already been observed. Polonowski reports cases of hemeralopia caused by the lack of vitamin A. At a meeting of the Société de pédiatrie Clement mentioned several cases of xerophthalmia among nurslings, also due to a vitamin A shortage. In the Société médico-psychologique, Sivadon and others referred to mass phenomena of diseases resembling beriberi among the insane due to vitamin B_1 deficiency. Cases of scurvy have also been observed. At the Société des médecins du nord, Demorez and Boulanger reported postoperative hemorrhages and hemorrhages of the gums due to vitamin C deficiency. Of utmost interest are the reports of Raoul Lecoq in the Académie de médecine on polyneuritic symptoms, which were first supposed to be an avitaminosis and proved later to be caused by an acidosis due to inadequate feeding in general. Professor Mouriquand calls these cases of vitamin deficiency reversible, and they can be cured by medical treatment. The symptoms of the so-called paravitaminosis producing irreversible changes are to be expected only after a prolonged lack of vitamins.

The Section d'alimentation of the Comité consultatif d'hygiène at Vichy determined to organize the systematic distribution of vitamins A, B and C. Professor Lesne, a specialist in vitamin research, believes that the effect of natural vitamins is superior

to that of the artificial ones. For instance, the treatment of scurvy by giving 50 cc. of lemon juice containing 25 mg. of ascorbic acid produces quicker results than 25 mg. of ascorbic acid administered as a medicament. The artificial vitamins, especially vitamin C, are quickly absorbed and also quickly secreted by the kidney. These vitamins have to be administered every day in order to be efficacious. Besides, there exists an antagonism among the different artificial vitamins. The body eliminates, for instance, vitamin C if vitamin A or D is administered simultaneously. Professor Lesne said at a meeting of the Académie de médecine that if good results have been realized with the administration of artificial vitamins "they are not able to mend the deficiency due to inadequate food."

MEXICO CITY

(From Our Regular Correspondent)

Jan. 21, 1942.

Population Problems in Mexico

The Bureau of Statistics and Economical Studies of the Central Department in the Federal District has collected the following data: According to the census of March 6, 1940 the Federal District, including Mexico City, has a population of 1,749,916 inhabitants, twice the figure given in the 1921 census and 37.8 per cent higher than in 1930, the result, undoubtedly, of immigration from the rural zones, especially the southern states. Mexico City in population has the seventeenth place in the world and the seventh on the American continent. The mean population in the city of Mexico is 10,951 inhabitants per square kilometer. The northeastern quarters have a human density of 27,927 per square kilometer and in towns and villages surrounding the city, which form the Federal District, the mean population is only 233 inhabitants per square kilometer. This zone contains 366,006 families with an average of 4.8 members per family, against 5.16 shown in the census of 1930. During the last decade 1,478,405 children were born in the Federal District and only 971,800 were alive on the day of the census, which means that one child out of three dies before reaching boyhood. The highest infant and child mortality is registered among the people living in the poorest quarters of the city or else in the suburbs in which sanitation is faulty. In the Federal District 98 per cent of the inhabitants speak Spanish, 6 per cent speak other languages besides and only 2 per cent do not speak Spanish but foreign languages. Only about 4 per cent live in houses of their own. All wear shoes with the exception of some natives and foreigners, who wear "huaraches" (sandals). Marriages increased, but divorces were three times what they were ten years ago.

Malaria in Mexico

For a long time, malaria has been one of the greatest public health problems in Mexico, principally in the tropical rural zones and along the coasts. Few special studies have been carried on to determine its prevalence, the mass immunity and resistance of individuals and the bionomics of the species of anopheles present in the different malarial areas. The annual mortality rates for the three principal causes of death for 1922 and 1938 in Mexico were:

	Average Number of Deaths		Rate per 100,000	
	1922	1938	1922	1938
Diarrheas and enteritis	25,765	82,772	178.37	424.93
Pneumonias	33,744	62,376	233.61	320.23
Malaria	25,035	24,760	173.21	127.11

No reliable figures are available regarding morbidity, although malaria is one of the heaviest burdens supported by the Mexican people. The Bureau of Biostatistics of the Federal Department of Health states that there are more than 5 million patients every year. According to the economic capacity of the country and pursuant to the ordinance of Aug. 29, 1938 the Federal Department of Health has been working on a program based on three fundamental points: sanitation, education of the public and curative and preventive treatment of those living in heavily infested areas, besides other secondary measures. In accordance with the program, the sanitation of Acapulco Harbor, one of the most popular summer resorts in Mexico, the city and port of Mazatlán, Manzanillo Harbor on the Pacific Coast as well as some other cities, such as Guadalajara, in the rural zones in the South and Atlantic Coast, have been carried on successfully during last year. The planting of cinchona trees by the Federal Department of Health will be increased in special places chosen for that purpose in the state of Chiapas in the southwestern part of Mexico, in which twenty-four thousand cinchona trees have been planted, besides more planted in a zone of the state of Tamaulipas, by the department of agriculture. The free distribution of antimalarial medicines will continue and a new laboratory specially dedicated to the study of malaria in Huixtla, Chiapas, located in the heart of the tropical region, will be inaugurated this year. In the annual budget for 1942, besides the amount to be collected from the mosquito stamp, nearly a million pesos (about $200,000) will be spent in sanitation of rural areas.

Registration and Certification of Drugs, Foods and Cosmetics

The official organ of the House of Representatives publishes the new amendments to the Food, Drugs and Cosmetics Act related to the requisites for registration, taxes and duties for certification of such products. According to the new enactments, a patent medicine is any drug, medicine or pharmaceutic formula with a special name or trademark consistent with the patent law. Patent food is any food or beverage with a trademark. In general the registration rules consider as a food "anything introduced in the digestive tract without therapeutic purpose." A cosmetic is any perfume, face powder, cream, paste or the like, including medical soaps, destined to the beautifying of a person. According to article 6 the new registration taxes for drugs and cosmetics with foreign trademarks are 200 pesos, for drugs and cosmetics with domestic trademarks 20 pesos, for foods with foreign trademarks 50 pesos and for foods with domestic trademarks 20 pesos (the peso is equivalent to about 20 cents). Besides these registration taxes, all units or pieces of a patent medicine, drug, food or cosmetic should be certified by a stamp adhered to it and according to article 12 only a product accepted by the Food and Drug Committee of the Federal Department of Health can bear such a stamp and be put on sale. An official list of accepted products will be published periodically, and all products on sale without fulfilling all requirements will be confiscated and the firms will be fined.

The Fifth National Dental Congress

The fifth National Dental Congress organized by the Mexican Dental Federation affiliated with the International Federation of Dentists was inaugurated by Dr. Victor Fernández Manero, chief of the Federal Department of Health, on January 12 at the general session held at the Beaux Arts Palace in Mexico City. At the speakers' table, besides Dr. Fernández Manero, who represented the president of the Republic, were Dr. E. G. Loogan, president of the International Dental Federation, Dr. Gustavo Baz, secretary of public welfare, Dr. José J. Rojo, president of the Mexican Dental Federation, Dr. P. Ventruneda from Guatemala and other representatives from Central and South American countries. Dr. Gustavo Baz, secretary of public welfare, announced that in accordance with President Camacho's orders the National Dental Institute will be established during the present year. The congress, which was organized under the auspices of the National University, the Federal Department of Health and the Federal District Central Depart-

ment had a twofold purpose: to aid the progress of dentistry and strengthen the relationship between dentists in American countries. The transactions during the week consisted of scientific reports, papers and demonstrations, information to the public regarding dental and oral hygiene and exhibitions both commercial and scientific. All sessions were held at the National School of Dentistry. Three important reports were presented, on dentistry in relation to general diseases, dental ethics and modern trends in some dental problems. The closing general session was held on Saturday evening January 10. The officers of the old governing council were reelected for the new term.

AUSTRALIA

(From Our Regular Correspondent)

Nov. 15, 1941.

Social Security Revived in Australia

Following the defeat of the national government in Australia and the subsequent formation of a labor ministry, the question of social security and health insurance has again been brought up. Australia's new prime minister (Mr. Curtin) has stated that the newly formed labor government does not intend to overlook the fact that the establishment of a health insurance scheme has always been one of its major objectives. Meanwhile a general medical service for all Australians whose income does not exceed £416 a year has been approved as a policy by the federal council of the British Medical Association.

The plan presupposes the establishment of a national health insurance scheme to be administered by a statutory board of management. Main principles of the scheme are:

1. The system of medical service to be directed to the achievement of positive health and prevention of disease as much as to the relief of sickness.

2. Provision of the services of a general practitioner or a family doctor of his own choice for every individual.

3. Consultant, specialist, laboratory and all necessary auxiliary services with institutional provision when required to be available for the individual patient. Normally this would be done through the family doctor.

4. The several parts of the complete medical services to be closely coordinated and developed by applying a planned national health policy.

The plan was adopted at a recent meeting of the council.

Wireless Transmitting Apparatus (Possession) Order

To avoid the possibility of diathermy and other high frequency electrical apparatus causing interference to defense and other essential radio services, and to minimize the possibility of such apparatus being put to improper use, an order has been made under the national security regulations, which requires that no person, association, company, hospital, clinic or institution shall possess or operate the following types of apparatus without a license, if such apparatus develops power exceeding 10 watts at frequency exceeding 10,000 cycles per second: (*a*) Diathermy or other electromedical apparatus in which valves or spark coils are used, not including normal modern types of violet ray, ultraviolet ray, infra-red ray or x-ray apparatus or medical shocking coils. (*b*) High frequency furnaces. (*c*) Eddy current heating apparatus. (*d*) High frequency testing oscillators.

Before a license to operate any of this equipment is issued, the apparatus, or the room or premises in which the apparatus is installed, must be screened or otherwise treated so that interference will not be caused to authorized radio services. In the United Kingdom the equivalent regulation forbids absolutely the possession of diathermy apparatus by any private individual and even by private hospitals and clinics, but the Australian authorities consider that the situation does not warrant such sweeping action in the commonwealth.

War and the Activities of the Council for Scientific and Industrial Research

On the outbreak of war the Council for Scientific and Industrial Research considered the steps which could be taken to reorientate its investigations so as to render assistance in as direct a way as possible to the war effort of the British commonwealth of nations. It was not easy to make an immediate change over, but as the national effort gained momentum it was possible to devote more attention to studies directly related to war requirements. These studies have covered questions such as what Australian materials can replace materials previously imported, how best Australian materials can be used in new industries, what can be done to reduce the difficulties caused by any particular damming up of Australian exports and what can be done to alleviate difficulties caused by the upset of normal conditions. The division of food preservation and transport is working on the drying of various foodstuffs with a view to the export in that condition and a consequent saving of freight space. Particular attention is being given to eggs. The fisheries division is giving attention to the production of fish oils rich in vitamins and needed to replace cod liver oil, which it is no longer possible to obtain from Europe. Potash (for the dipping of dried vine fruits) is now difficult to obtain, but it has been shown that the shortage can be overcome by extracting potash from vine prunings. The division of plant industry is investigating the production of medicinal plants. At the request of the medical equipment control committee an investigation has been undertaken of the problem of growing certain essential drug plants. The chief plants concerned are Atropa belladonna, Artemisia maritima, Cephaelis ipecacuanha, Claviceps purpurea, Cinchona, Datura, Duboisia, Digitalis, Dryopteris Filix-mas, Ephedra, Papaver somniferum and Strychnos nux-vomica.

Australian-American Association

The movement toward forming the Australian-American Association was initiated by a body of Australian citizens in the belief that the ideals and outlook on life of the peoples of America and Australia are so closely allied that it needs only a thorough knowledge of each other to achieve mutual respect and full understanding of each other's point of view; that the future peace, freedom and prosperity of the Pacific largely depend on the achievement of such an understanding and friendly regard between these two peoples, and that the close friendship of the vigorous democracies of the New World may well be the decisive factor in reestablishing the principles of freedom in a threatened civilization.

The Australian-American Association has as its objects (1) to extend fellowship and hospitality to American visitors to our shores and to afford them facilities for obtaining an immediate knowledge of Australia, (2) to contribute to a better understanding by the Australian public of American affairs and point of view and (3) to attract in active membership citizens of both countries who will contribute to the furtherance of practical cooperation and mutual understanding.

Marriages

EDWARD BALDWIN SELF, South Orange, N. J., to Miss Beatrice Marie Bellinger of Woodside, L. I., N. Y., Nov. 6, 1941.

WILBUR FISKE LEIGHTON, Portland, Maine, to Miss Wilhelmina Gerard Herrmann of Jersey City, N. J., Oct. 31, 1941.

RICHARD DEPUY NIERLING, Jamestown, N. D., to Miss Grace Jessie Erickson at Grand Forks, Dec. 27, 1941.

FUNSTON J. ECKDALL, Emporia, Kan., to Miss Clara R. Maurycy of Schenectady, N. Y., Dec. 10, 1941.

PAUL H. BRAUER to Miss Arlette Philippous, both of New York, June 14, 1941.

Deaths

Soma Weiss ✠ Boston; Hersey professor of theory and practice of physic at the Harvard Medical School and the graduate school, died, January 31, aged 43. Dr. Weiss was born in Bestercze, Hungary, Jan. 27, 1899. He received an A.B. from Columbia University, New York, in 1921 and graduated from Cornell University Medical College, New York, in 1923. He served as demonstrator and research fellow in physiology and biochemistry at the Royal Hungarian University in Budapest between 1917 and 1920, when he became assistant in pharmacology at Cornell and served in that capacity until 1923. He joined the faculty of Harvard Medical School in 1925 as assistant in medicine, was instructor in medicine from 1927 to 1929, assistant professor from 1929 to 1932 and associate professor from 1932 to 1939. Dr. Weiss was a member of the American Society for Clinical Investigation, the American Academy of Arts and Sciences, the American Heart Association and the Association of American Physicians and numerous others and fellow of the American College of Physicians. He was the second to hold the post of physician in chief of the Peter Bent Brigham Hospital. He was formerly associate physician and assistant director of the Thorndike Memorial Laboratory of the Boston City Hospital, director of the Second and Fourth Harvard Medical Services at the City Hospital and later chief of the Fourth Service. Dr. Weiss was a member of the Council on Pharmacy and Chemistry of the American Medical Association and a member of the United States Pharmacopeial Revision Committee. He was especially well known for his work on cardiovascular disease.

Charles Hatch Stoddard, Milwaukee; College of Physicians and Surgeons of Chicago, 1892; member of the House of Delegates of the American Medical Association in 1916; member of the board of directors of the Wisconsin Anti-Tuberculosis Association from 1909 to 1911, vice president from 1925 to 1930, president, 1931-1932, and recording secretary from 1933 to 1941; in 1918 and in 1932 vice president of the Milwaukee Academy of Medicine; member of the first Wisconsin committee of the International Congress on Tuberculosis in 1908; in 1927 president of the Milwaukee County Medical Society; fellow of the American College of Physicians; was a major in the medical corps of the Wisconsin National Guard during the World War; in 1907 first medical director and superintendent of the Bluemond Sanatorium; on the staffs of the Columbia Hospital, Mount Sinai Hospital, St. Mary's Hospital, Milwaukee County Hospital and the Milwaukee Hospital; aged 72; died, Dec. 17, 1941, of chronic nephritis.

George Albert Smith, Wakefield, N. H.; Bellevue Hospital Medical College, New York, 1881; member of the Medical Society of the State of New York and of the American Psychiatric Association; was appointed assistant physician in 1882 at the city mental hospital located at Hart's Island, where he was superintendent from May 1, 1892 to Jan. 1, 1895, when he was transferred as superintendent to the New York City Farm for the Insane at Central Islip, which later became a unit of the Manhattan State Hospital and later a separate institution known as the Central Islip State Hospital, where he was superintendent and retired in December 1932 when he became superintendent emeritus; served for many years on the Governor's Lunacy Commission to examine before electrocution those convicted of murder; was at one time acting superintendent of the Pilgrim State Hospital, Brentwood, N. Y.; aged 83; died, January 6, in Garden City of acute coronary infarction.

Charles Manly Peters, Jersey City, N. J.; College of Physicians and Surgeons, Baltimore, 1913; also a dentist; consulting stomatologist from 1915 to 1922, attending oral surgeon from 1923 to 1939 and since 1940 consulting oral surgeon, Christ Hospital; chief oral surgeon, Jersey City Medical Center; chief maxillofacial surgeon, Margaret Hague Maternity Hospital; consulting oral surgeon, North Hudson Hospital, Weehawken, N. J., and St. Mary's Hospital, Hoboken; aged 62; died, Dec. 26, 1941.

Douglass William Montgomery ✠ San Francisco; College of Physicians and Surgeons, medical department of Columbia College, New York, 1882; member and in 1910 president of the American Dermatological Association; for many years professor of dermatology at the University of California Medical School; cofounder of the San Francisco Polyclinic and its first dermatologist; aged 82; died, Dec. 21, 1941, in Guayaquil, Ecuador, of coronary thrombosis.

S. Arthur Morris, New York; Columbia University College of Physicians and Surgeons, New York, 1918; member of the Medical Society of the State of New York and of the American Society of Anesthetists, Inc.; past president of the New York Society of Anesthetists; on the staffs of the North Hudson Hospital, Weehawken, N. J.; Harlem Hospital, St. Elizabeth Hospital and the Lutheran Hospital; aged 51; died, January 5.

George Burton Stull, Harrisburg, Pa.; Medico-Chirurgical College of Philadelphia, 1906; member of the Medical Society of the State of Pennsylvania; past president of the Dauphin County Medical Society; was on the staffs of the Harrisburg Hospital and the Harrisburg State Hospital; served as company surgeon for the Pennsylvania Railroad; aged 63; died, Dec. 18, 1941, in Philadelphia of chronic lymphatic leukemia and streptococcic bacteremia following prostatectomy.

Walter Brown Orbin, Dormont, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; aged 63; died, Dec. 6, 1941, in the Presbyterian Hospital, Pittsburgh, of cerebral hemorrhage.

Thomas Madison Boyd ✠ Norman, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1917; served during the World War; formerly on the staff of the Central State Hospital; aged 47; died, Oct. 29, 1941, of pulmonary tuberculosis.

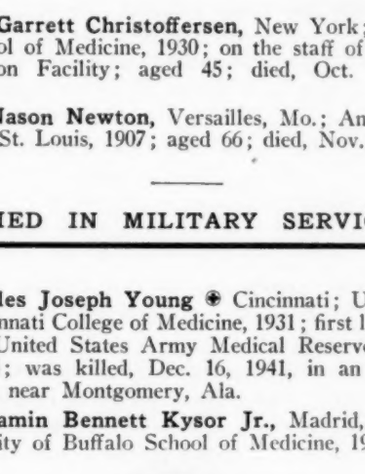
William Garrett Christoffersen, New York; Boston University School of Medicine, 1930; on the staff of the Veterans Administration Facility; aged 45; died, Oct. 25, 1941, of pneumonia.

Samuel Nason Newton, Versailles, Mo.; American Medical College, St. Louis, 1907; aged 66; died, Nov. 14, 1941.

DIED IN MILITARY SERVICE

Charles Joseph Young ✠ Cincinnati; University of Cincinnati College of Medicine, 1931; first lieutenant in the United States Army Medical Reserve Corps; aged 34; was killed, Dec. 16, 1941, in an airplane accident near Montgomery, Ala.

Benjamin Bennett Kysor Jr., Madrid, N. M.; University of Buffalo School of Medicine, 1937; first



BENJAMIN BENNETT KYSOR JR.

lieutenant in the medical reserve corps of the United States Army; aged 28; was killed in action recently at Corregidor Island, P. I.

Simm Hartt Moore, Houston, Texas; University of Texas School of Medicine, Galveston, 1907; member of the State Medical Association of Texas; served during the World War; was a lieutenant colonel in the National Guard, 111th medical regiment, 36th division, Camp Bowie; was serving at Camp Walters where he died, Dec. 7, 1941, of coronary sclerosis, aged 55.

Correspondence

"ENDOCRINE TREATMENT OF CRYPTORCHISM"

To the Editor:—After reading the article on this subject by Thompson and Heckel (THE JOURNAL, Dec. 6, 1941, p. 1953) I must voice decidedly different opinions as to the proper treatment of youngsters with this condition.

The authors recommend the injection of chorionic gonadotropin from three to six times a week. This is continued from six to eight weeks on the average or until some growth in the genitals is produced. If under this treatment the testis or testes do not descend, immediate operation is advised. The authors feel a little uncertain how early in life this treatment should be instituted, but their observations suggest a very early age.

The authors admit that glandular therapy will not cause descent of a testis which will not descend spontaneously by puberty. This treatment, however, separates the cases that require operation; by means of glandular and operative treatment the testis is brought down into its normal position at an early age, which the authors believe is highly important. According to their experience a testis brought down into the scrotum by glandular or operative treatment is smaller than normal. They do not feel sure whether these testes are small because they have not descended normally or whether they have not descended because they were small. Because of the former possibility, they believe that the testis should be gotten down into the scrotum at as early an age as possible.

It would be unfortunate if the authors' recommendations were to be generally adopted, for this would entail a lot of needless glandular therapy and operations with useless expense and suffering. First, the great majority of undescended testes—and by this term I mean testes which cannot be palpated in the upper scrotum or in the inguinal canal but which lie within the abdominal cavity—descend spontaneously by the fifteenth year. In the small series reported by me (Spontaneous Late Descent of the Testis, THE JOURNAL, March 10, 1934, p. 759) eleven of the twelve testes eventually descended spontaneously. Johnson's report (Cryptorchism, THE JOURNAL, July 1, 1939, p. 25) of his experience in the examination of 31,609 boys confirmed my limited observations. Of the 544 cases encountered, 313 descended spontaneously during the limited period of observation. Some 154 boys were lost sight of and no follow-up examination was made on an additional 63. This was the first report I know of in which the natural course of unmolested undescended testes was followed in a large enough series to be convincing. Its perusal is recommended to those who question the frequency of spontaneous descent.

The testis that descends spontaneously but late is generally normal. This has been my experience, and Johnson reported that "spontaneous descent resulting in a normal testis as to size, consistency and position occurred in 300 instances." Presumably this was not the case in 13 cases. Another fact which I observed and which was confirmed by Johnson is that this spontaneous late descent occurs most frequently in the eleventh, twelfth, thirteenth and fourteenth years and an appreciable number in the fifteenth year. This fact should allay the urge that many seem unable to resist to institute active glandular or operative treatment at an early age.

Further, it has been shown that the undescended testis before puberty is indistinguishable microscopically from the normally descended one. Only occasionally is cryptorchism associated with evidence of glandular deficiency. Boys with one or both testes undescended are not in my experience "slightly frail and somewhat effeminate" in appearance. Either before or after puberty it would be impossible for any one to pick out of a group of boys by their general appearance those whose only abnormality was an undescended testis or testes. In fact, the only boy in my group whose testis failed to descend eventually could lick any boy his age in the school. I doubt whether the idea that late descent of the testes is due to lack of hormone is tenable.

The question of the advisability of using glandular therapy before puberty in these cases deserves serious consideration. In my opinion one should think twice before undertaking any therapy that will produce enlargement of the genitals before puberty.

The authors were able to produce descent in only two of thirty-four intra-abdominal testes by glandular treatment. This to me makes it apparent that the response to glandular treatment does not designate those cases in which spontaneous descent would have occurred.

Briefly, it is my conviction that these youngsters with one or both testes undescended and no evidence of glandular disturbance should simply be observed until their fifteenth year. There can be no great objection to trying the effect of glandular therapy in the few remaining cases, although a certain number among the few remaining undescended testes will descend in the late teens and descend satisfactorily. Certainly operation has a limited field in the correction of uncomplicated cryptorchism.

CARL B. DRAKE, M.D., St. Paul.

NOTE.—The letter of Dr. Drake was sent to Dr. W. O. Thompson, who replies:

To the Editor:—We are still not convinced that Dr. Drake means the same thing we do by the term "undescended testis." The problem of diagnosis is important, and it is not always easy to distinguish true cryptorchism from pseudocryptorchism (migratory testis). In some instances of pseudocryptorchism the testis may retract into the abdomen, simulating intra-abdominal cryptorchism. In our experience migratory testes are frequently considered true undescended testes. At the onset of puberty these testes promptly take up a permanent location in the scrotum. Moreover, often after only a few doses of chorionic gonadotropin they will remain in the scrotum for a time and may become migratory again when the effect has worn off. It is because we have excluded migratory testes that our percentage of successful results with chorionic gonadotropin is so much lower than that reported by many other observers.

Dr. Drake states that the testes which he has observed that moved spontaneously into the scrotum at the age of 12 to 15 years were "generally normal" both in size and in microscopic appearance, whereas in our experience a true undescended testis is often smaller after it has been placed in the scrotum with glandular therapy or operative procedures than the testis which has been in the scrotum since birth. Migratory testes are often normal in size. These facts lead us to wonder whether Dr. Drake has failed to distinguish migratory testes from true undescended testes. It is difficult to see how the testes that Dr. Drake observed could have been normal unless they had been in the scrotum a considerable part of the time.

We can see no good reason to modify what we have said in our article under the subtitle "The Status of Glandular Therapy." In particular we should like to repeat the following arguments in its favor:

1. The testis can function normally only in the environment of the scrotum.

2. It is therefore logical to assume that the earlier it is brought into the scrotum the more likely it is to be normal.

WILLARD O. THOMPSON, M.D.

NORRIS J. HECKEL, M.D.

Chicago.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, January 31, page 400.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Feb. 9-11. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II.* Atlantic City, June 6-7. Final date for filing application is March 7. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* St. Paul, April, in advance of the meeting of the American College of Physicians, and Philadelphia, June, in advance of the meeting of the American Medical Association. Applications should be on file 6 weeks in advance of the date of oral examination. *Written.* Oct. 19. Final date for filing application is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: New York, June. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral. Part II. Groups A and B* Atlantic City, May or June. Final date for filing application is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, June 6 and Philadelphia, June 8. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral and Written. All Groups.* Philadelphia, June, preceding the meeting of the American Medical Association. Final date for filing application is March 1. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, February 14. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Boston, May 15-16. Final date for filing application is March 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: *Oral. All Groups.* Atlantic City, June 4. Final date for filing application is April 1. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written. Part I.* Various centers, March 2. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

Alabama Reciprocity Report

The Alabama State Board of Medical Examiners reports 6 physicians licensed to practice medicine by reciprocity from Nov. 6 through Dec. 8, 1941. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine		(1937)	Illinois
Louisiana State University School of Medicine		(1940)	Louisiana
Tulane University of Louisiana School of Medicine		(1939)	Louisiana
Johns Hopkins University School of Medicine		(1923)	Maryland
Washington University School of Medicine		(1939)	Missouri
Jefferson Medical College of Philadelphia		(1939)	Penna.

Arkansas Reciprocity Report

The Arkansas State Board of Medical Examiners reports 10 physicians licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from July 7 through Dec. 31, 1941. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1940)	Missouri
University of Illinois College of Medicine		(1939)	Texas
Boston University School of Medicine		(1936)	New York
University of Oklahoma School of Medicine		(1935), (1939)	Oklahoma
University of Pennsylvania School of Medicine		(1932)	Penna.
Medical College of the State of South Carolina		(1940)	S. Carolina
Memphis Hospital Medical College		(1903)	Tennessee
University of Tennessee College of Medicine		(1914)	Tennessee
University of Wisconsin Medical School		(1928)	New York

School	LICENSED BY ENDORSEMENT	Year Grad.
Tulane University of Louisiana School of Medicine		(1940)
Duke University School of Medicine		(1939)

Maine November Report

The State of Maine Board of Registration of Medicine reports the written examination for medical licensure held at Portland, Nov. 12-13, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifteen candidates were examined, 11 of whom passed and 4 failed. Five physicians were licensed to practice medicine by reciprocity and 8 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Georgetown University School of Medicine		(1933)	1
Harvard Medical School		(1938), (1939)	2
Columbia University College of Physicians and Surgeons		(1940), (1941)	2
Duke University School of Medicine		(1939)	1
Jefferson Medical College of Philadelphia		(1941)	1
University of Toronto Faculty of Medicine		(1938)	1
University of Western Ontario Medical School		(1931)	1
McGill University Faculty of Medicine		(1932)	1
Magyar Királyi Pazmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1932)	1

School	FAILED	Year Grad.	Number Failed
University of Montreal Faculty of Medicine		(1941)	1
Medizinische Fakultät der Universität Wien		(1935), (1936)	2
Universität Bern Medizinische Fakultät		(1937)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1929)	Dist. Colum.
Tufts College Medical School		(1939)	Michigan
University of Rochester School of Medicine and Dentistry		(1934)	Maryland
McGill University Faculty of Medicine		(1936)	Minnesota
Regia Università degli Studi di Bolgna. Facolà di Medicina e Chirurgia		(1935)	Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.
Georgetown University School of Medicine		(1940)
Boston University School of Medicine		(1931), (1938)
Harvard Medical School		(1937)
Tufts College Medical School		(1934), (1939)
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1934)
Uniwersytet Jozefa Pilsudskiego, Warszawa		(1936)

North Carolina Reciprocity Report

The Board of Medical Examiners of the State of North Carolina reports 16 physicians licensed to practice medicine by reciprocity and 7 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners on Dec. 10, 1941. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1929) (1933)	Dist.Colum., Virginia
University of Illinois College of Medicine		(1933)	Illinois
State University of Iowa College of Medicine		(1937)	Iowa
Tufts College Medical School		(1934)	Maine
Wayne University College of Medicine		(1930)	Michigan
Washington University School of Medicine		(1940)	Missouri
Cornell University Medical College		(1937)	Virginia
Woman's Medical College of Pennsylvania		(1934)	Penna.
Medical College of the State of South Carolina		(1925) (1938)	S. Carolina, Dist. Colum.
University of Tennessee College of Medicine		(1934)	Tennessee
Medical College of Virginia		(1916), (1941)	Virginia
University of Virginia Dept. of Medicine		(1929), (1932)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.
College of Medical Evangelists		(1940)
Yale University School of Medicine		(1935)
Duke University School of Medicine		(1935), (1937), (1938), (1939)
University of Pennsylvania School of Medicine		(1938)

Colorado Endorsement Report

The Colorado State Board of Medical Examiners reports 5 physicians licensed to practice medicine by endorsement on January 6. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College		(1938)	Nebraska
University of Chicago, The School of Medicine		(1939)	N. B. M. Ex.
State University of Iowa College of Medicine		(1940)	N. B. M. Ex.
Johns Hopkins University School of Medicine		(1940)	Maryland
University of Nebraska College of Medicine		(1925)	Nebraska

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Use by Unlicensed Naprapath of Healing Art Title or Abbreviation.—An information was filed in the county court, Cook County, Ill., charging DeYoung, an unlicensed naprapath, with various violations of the Illinois medical practice act. The first count of the information charged that DeYoung did unlawfully diagnose an ailment or supposed ailment of a named person. The second count charged that he unlawfully treated the supposed asthma of the person referred to in the first count by manually "applying pressure and manipulating the back, side, vertebra and neck of the said" person. The third count charged that he unlawfully suggested and recommended the manipulations referred to with the intent of receiving a fee therefor. The fourth count alleged that he unlawfully attached the title Doctor, Physician, Surgeon, M.D. or some other word or abbreviation to his name indicative that he was engaged in the treatment of human ailments as a business. The fifth and final count charged that DeYoung did unlawfully maintain an office for the treatment of human ailments. At the trial the patient referred to in the information testified that she went to DeYoung's home, on the porch of which was a sign "Dr. Joseph DeYoung, Naprapath." She consulted the defendant relative to some difficulty which she informed him she was having in breathing and told him that she suspected it was asthma or hay fever. DeYoung examined the patient in a room of his home which he used as an office. He pressed his fingers along her spine and told her that she did not have "much asthma" and gave her a massage treatment. The patient paid him $5 for "half a course of naprapathic treatments" and he gave her a receipt signed "Joseph DeYoung, D.N." Before she left DeYoung's office and home he gave her three pamphlets, which were subsequently introduced in evidence at the trial. One pamphlet was entitled "Bulletin of the American Naprapathic Association. Volume XII, Burlington, Iowa, September, 1936, Number 11." and contained articles by various persons as to the efficacy of naprapathic treatments for numerous conditions. At the top of the first page was stamped "Dr. Joseph DeYoung, Thornton, Ill." Another pamphlet was entitled "The Business of Living" and advocated naprapathic treatments for the cure of many different human ailments. It was stated on the fourth page of this pamphlet that "Naprapathy is a scientific method of treating diseases, both chronic and acute, without drugs or surgery. Diseases and ailments which are regarded as incurable are cured by this wonderful treatment." On the last page of this pamphlet there was written in ink, "Dr. DeYoung, Thornton, Illinois." The other pamphlet was entitled "A Personal Message" and consisted of questions and answers about naprapathy. The second question in the pamphlet was, "What is it?" and the answer, "Naprapathy is a system of accurately charted manipulative treatment for the cure of human ailments." On the next to the last page of this pamphlet it was represented that a long list of human diseases had been successfully treated by naprapathy. On the last page there was printed in heavy type, "Dr. Joseph DeYoung, Naprapathic Physician, Thornton, Ill." The second count of the indictment was quashed and the jury returned a verdict of not guilty as to the first, third and fifth count but found DeYoung guilty on the fourth count. Judgment was entered on the verdict and the defendant appealed to higher courts, the matter eventually reaching the Supreme Court of Illinois.

DeYoung contended that the fourth count of the information on which he was convicted should have been quashed because it did not allege that he was in fact engaged in the treatment of human ailments as a business. In answering this, the Supreme Court quoted from section 24 of the Illinois medical practice act, reading, in part as follows:

> If any person [1] shall hold himself out to the public as being engaged in the diagnosis or treatment of ailments of human beings; or [2] shall suggest, recommend or prescribe any form of treatment for the palliation, relief or cure of any physical or mental ailment of any person with the intention of receiving therefor, either directly or indirectly, any fee, gift, or compensation whatsoever; or [3] shall diagnosticate or attempt to diagnosticate, operate upon, profess to heal, prescribe for, or otherwise treat any ailment, or supposed ailment of another; or [4] shall maintain an office for examination or treatment of persons afflicted, or alleged or supposed to be afflicted, by any ailment; or [5] shall attach the title Doctor, Physician, Surgeon, M.D., or any other word or abbreviation to his name, indicative that he is engaged in the treatment of human ailments as a business; and shall not then possess in full force and virtue a valid license issued by the authority of this State to practice the treatment of human ailments in any manner, he shall be guilty of a misdemeanor.

It will be noted, said the Supreme Court, that this section of the medical practice act defines five different crimes and the fourth count of the information on which DeYoung was convicted was based on the fifth crime stated in the section. The elements of that crime as defined in the statute are: (1) The person charged must have added the word "Doctor" or some other word or abbreviation to his name, (2) indicative that he was engaged in the treatment of human ailments as a business. This is not a declaration that the mere attaching of the title "Doctor" in itself conclusively establishes that the person charged was engaged in the treatment of human ailments as a business, but rather that the title or abbreviation must be attached and used in a manner and under such circumstances as to indicate that such person was so engaged. These are the only requirements of the fifth crime designated in the section quoted. In order to constitute the crime therein defined, it is not essential that the person charged actually be engaged in the treatment of human ailments as a business. Actual treatment without a license is a crime under a different clause of the section. There is no merit in DeYoung's contention that the fourth count is deficient because it does not contain an allegation that he was actually engaged in the treatment of human ailments as a business. Likewise there is no merit in his argument that the fourth count insufficiently set forth the acts charged to be a violation of the statute. That count charged the defendant, in the words of the statute, with violating it.

DeYoung next contended that the verdict of guilty as to the fourth count was repugnant to the verdicts of not guilty on the other counts. There is no merit in this contention, said the Supreme Court, for the specific charge made against DeYoung in the fourth count was separate and distinct from the charges made in the other counts.

The next question presented to the Court was whether or not the evidence showed beyond a reasonable doubt that DeYoung attached the titles "Dr." and "Physician" to his name in such a manner as to indicate that he was engaged in the treatment of human ailments as a business. Several of the witnesses called by the defendant, said the Supreme Court, testified that naprapathy is merely massage of a particular type and that human diseases cannot be cured by this treatment. DeYoung testified that the title "Doctor" has many different meanings and may be used outside the field of medicine and that he had had the degree of "Doctor of Naprapathy" conferred on him. None of this testimony, continued the Court, tended to prove or disprove the allegations of the fourth count that the defendant attached the title "Dr." to his name indicative that he was engaged in the treatment of human ailments as a business. On two of the three pamphlets which were given to the patient who testified in this case either the defendant or some one in his household printed or wrote "Dr. DeYoung" without any qualification which would have shown that he was not a regular and licensed medical practitioner. On the third pamphlet, the name "Dr. DeYoung" was followed by the words "Naprapathic Physician." There was testimony which would warrant the jury's belief that the defendant gave these pamphlets to the witness even though he denied such a gift. In each of these pamphlets, representations were made that human diseases have been successfully treated and cured by naprapathic treatments. While DeYoung was not the author of these pamphlets, by attaching to his name as printed thereon the title "Dr." and by delivering them to the patient witness, he adopted the statements contained therein as his own and indicated that he was engaged in the treatment of human ailments as a business. In the opinion of the Court, therefore, the offense charged in the fourth count was proved beyond a reasonable doubt.

The judgment of conviction was accordingly affirmed.—*People v. DeYoung, 38 N. E. (2d) 22 (Ill., 1941).*

Dental Practice Acts: Suspension of License for Advertising Statements of a Character Tending to Deceive or Mislead the Public.—The California dental practice act authorizes the board of dental examiners to revoke or suspend the license of a dentist guilty of unprofessional conduct, which, among other things, the act defines as "The making use of any advertising statements of a character tending to deceive or mislead the public." On a charge that Smulson had so advertised, the board, after notice and hearing, suspended for two years his license to practice in California. He sought a writ of mandate from the superior court, Los Angeles County, to compel the board to vacate its order suspending his license. From a judgment for the board, Smulson appealed to the district court of appeals, second district, division 1, California.

Smulson contended that the provision of the dental practice act under which his license was suspended is too vague and uncertain to enable a dentist to know what is forbidden and is therefore void. The act, said the court, here in question provides suspension or revocation of the license of a dentist making use of any advertising statements of a character "tending to deceive or mislead the public." The words of this provision are well known and understood in both popular and legal language. This description of the forbidden practices is no more uncertain than many other statutory provisions which have been held to be valid exercises of legislative power. It is not required that even a penal statute, to be valid, have that degree of exactness which inheres in a mathematical theorem. The law is full of instances in which a man's fate depends on his estimating rightly, that is, as the jury subsequently estimates it, some matter of degree. A case very similar to the present one, said the court, is *Glass* v. *Board of Medical Examiners,* 50 Cal. App. 389, 195 P. 73, which upheld a provision of the medical practice act defining unprofessional conduct for which a license could be revoked as including "all advertising of medical business which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public morals or safety." The court in the Glass case said:

> It would not be possible to frame a definition of unprofessional advertising which would anticipate in terms every form of advertisement which unscrupulous practitioners might thereafter devise. This being so, it cannot reasonably be held necessary to the validity of the statute that it go further than to state a reasonably definite rule under which all such specific acts might be included. This we think has been done in the terms of the statute so far as the same are now presented for consideration.

The charges on which the board proceeded in the proceedings against Smulson alleged that he "knowingly and intentionally caused to be printed, circulated and distributed to the general public . . . a certain hand bill . . . wherein and whereby the said Harry Smulson did advertise as a dentist and did make use of advertising statements of a character tending to deceive or mislead the public, a photostatic copy of which advertisement is hereto attached." Smulson contended apparently that the charges were insufficient but for just what reasons the reported decision does not make clear. In proceedings, said the appellate court, before a licensing board for revocation or suspension of a professional license on account of unprofessional conduct the accusation or complaint is sufficient if expressed in the language of the statute. This rule is subject to the qualification that the language of the statute must be sufficiently explicit to advise a person charged thereunder of the particular kind of unprofessional conduct which it is proposed to prove against him. Here the language of the statute used in the accusation would of itself be sufficient to comply with the rule, as so qualified, but the accusation goes further and sets forth a copy of the advertisement used and characterizes it in the statutory language.

In describing the advertisement attached to the complaint, the appellate court said: "As is usual in such cases it is grossly and fulsomely laudatory of [Smulson's] mode of operations and of the quality of the work done by him." Referring to dental plates, the attached advertisement said: "They are made after Dr. Smulson personally takes the impressions and makes a special study of your case. What I have done for thousands of other folks I am confident I can do for you." The statements just quoted, said the appellate court, read with the other matters commendatory of Smulson's work in the advertisement, convey the idea that it is too important a part of the practice to be left to the "skilled work of only licensed dentists" in Smulson's office, and so it is done by Smulson personally. A witness who testified at the hearing before the board stated that she had gone to Smulson's office for plates in response to this particular advertisement and that the impressions of her mouth were not taken by Smulson but by some dentist in his employ. Obviously, said the court, the declaration in the handbill or advertisement did not represent a uniform custom of his business and tended to mislead the public in a matter which in the handbill he tried to make it think was important. Smulson endeavored escape from this conclusion by urging that the word "take" in the statement quoted did not refer to the actual making of the impressions but meant that after they are made Smulson "takes" them in his hands for the purpose of studying them. To any one who has heard any discussion of such matters, continued the court, this is plainly a forced and unusual construction of the language used. Even if it be accepted as a possible construction, it remains true that the construction we have given the word "take" in this connection, as referring to the actual work of making the impressions, is also possible and much more in consonance with ordinary usage.

The handbill or advertisement also contained these statements: "You can have your plates and make your first payment 30 days after they are completed by using my no money down easy payment plan"; "Don't Pay Me One Penny Until You Have Worn My Dental Plates for 30 Days." These statements, said the court, were also misleading. According to Smulson's testimony, the easy payment plan referred to consisted in taking a note, which he required the patient to sign, and selling it to a finance company, first submitting the application for credit to that company before doing the work. The date of the first payment was put in the note when the patient made a definite appointment for the work and was fixed so as to be thirty days after the then estimated time for completion. One witness before the board testified that the time for her first payment on the note arrived and she was sued on the note before she got one of her plates fixed up so that she could wear it. In Smulson's actual practice, he fixed the date of the first payment before he even began to work on the plates; at that time he could not know when he could complete the plates and have them in wearable condition, for sometimes many fittings with accompanying delay would be necessary for that purpose. But once the date of payment was fixed and the note transferred to a finance company, it was out of his power to extend the time to conform to his statements in the handbill.

The order of the board of dental examiners suspending Smulson's license was, in effect, affirmed.—*Smulson v. Board of Dental Examiners, 118 P. (2d) 483 (Calif., 1941).*

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17.

American Association of Anatomists, New York, April 1-3. Dr. Eliot R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, St. Louis, April 2-3. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norvelle C. LaMar, 149 East 73d St., New York, Secretary.

American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.

American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Boston, March 31-April 4. Dr. Raymond N. Bieter, University of Minnesota Medical School, Minneapolis, Secretary.

American Society of Anesthetists, New York, Feb. 12. Dr. Paul M. Wood, Room 1503, 745 Fifth Ave., New York, Secretary.

Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.

Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase, St., Baltimore, Secretary.

Mid-South Post Graduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 165 Madison Ave., Memphis, Tenn., Secretary.

Pacific Coast Surgical Association, San Francisco and Del Monte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.

Society of University Surgeons, Cincinnati, Feb. 12-14. Dr. Frank Glenn, 525 East 68th St., New York, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, New York

31:1121-1242 (Nov.) 1941

The City Health Officer Looks at Public Health. J. L. Rice, New York.—p. 1121.
Protection of Children in Great Britain in War Time. Martha M. Eliot, Washington, D. C.—p. 1128.
Study of Home Accidents: Their Public Health Significance. D. B. Armstrong and W. G. Cole, New York.—p. 1135.
Adolescence and Public Health. L. K. Frank, New York.—p. 1143.
Population Variables and the Public Health Worker. E. L. Koos, New York.—p. 1151.
Plague Situation in Western United States. R. H. Creel, San Francisco.—p. 1155.
Problem of Insecticide Spray Residue. A. J. Cox, Sacramento, Calif.—p. 1163.
Milk-Borne Disease in Massachusetts, 1933-1940. R. F. Feemster, Boston.—p. 1169.
Wartime Protection of Water Supplies. R. F. Goudey, Los Angeles.—p. 1174.
Facts and Fancies About Food Fats. A. J. Carlson, Chicago.—p. 1181.
Staphylococcus Enterotoxin: Improved Cat Test, Chemical and Immunologic Studies. W. M. Hammon, Boston.—p. 1191.
Studies in Epidemiology of Primary and Secondary Syphilis in New York City. B. Webster and E. I. Shelley, New York.—p. 1199.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

46:605-764 (Nov.) 1941. **Partial Index**

Value of Roentgen Ray in Diagnosis and Prognosis of Silicosis. W. M. Doughty, Cincinnati.—p. 605.
Linear Shadows in Lung (Interlobar Pleuritis, Atelectasis and Healed Infarction). F. Fleischner, A. O. Hampton and B. Castleman, Boston.—p. 610.
Funnel Chest Deformity and Its Recognition in Posteroanterior Roentgenograms of Thorax. L. W. Paul and M. R. Richter, Madison, Wis.—p. 619.
Roentgenologic Study of Acute Infections in Respiratory Tract of Children. J. S. Bouslog, Denver.—p. 622.
Cineroentgenographic Diagnosis of Congenital and Acquired Heart Disease. W. H. Stewart, C. W. Breimer and H. C. Maier, New York.—p. 636.
Differential Diagnosis by Means of Intravenous Contrast Medium of Two Cases Simulating Aneurysm of Pulmonary Artery. S. A. Thompson, New York.—p. 646.
Diverticula of Upper End of Stomach. H. G. Reineke, Cincinnati.—p. 650.
Nonspecific Bone Infection with Unusual or Obscure Features: Cases. R. W. Lewis, New York.—p. 659.
Roentgenologic Aspects of Subungual Glomus Tumor. E. L. Rypins, Bloomington, Ill.—p. 667.
*Irradiation of Pituitary Gland in Posterior Lobe Hyperfunction Controlled by Biologic Tests. E. P. Pendergrass, P. J. Hodes and J. Q. Griffith Jr., Philadelphia.—p. 673.
Further Studies in Radium Treatment of Carcinoma of Uterine Fundus. R. E. Fricke and H. H. Bowing, Rochester, Minn.—p. 683.
*Pneumoperitoneum as Aid in Pelvic Irradiation for Carcinoma of Cervix. L. R. Sante, St. Louis.—p. 689.
Interstitial Irradiation in Cancer of Uterine Cervix. J. R. Andrews, Cleveland.—p. 700.
Classification of Cancer of Breast. S. G. Schenck, Brooklyn.—p. 709.
Relative Biologic Effectiveness of Roentgen Rays and Neutrons on Regeneration of Forelimb of Amblystoma Larvae. E. C. Horn, Princeton, N. J.—p. 727.

Irradiation of Pituitary Gland.—Pendergrass and his associates state that they have irradiated the pituitary gland of 31 patients with high blood pressure and of 10 with symptoms referable to menopause or menstruation. Blood studies of almost every patient for the antidiuretic substance prior to irradiation gave positive results. Approximately half the patients were clinically improved after irradiation of the hypophysis. In about two thirds of the patients irradiating the pituitary caused the positive results of antidiuretic tests to become negative. This suggests that there may exist in the region of the hypophysial fossa a center or centers which partially control the antidiuretic substance of the blood. There is evidence that the pars neuralis (posterior lobe) liberates this substance. Other authors believe that the hypothalamus and its supraoptic nuclei may do so. As far as roentgen therapy is concerned it is immaterial which area liberates the substance, as both are included in the field of irradiation. Study suggests that as the dose is increased to about 500 roentgens more positive results of antidiuretic tests become negative. In some persons the reaction may become negative with 80 roentgens delivered to the skin of the temple, whereas doses as high as 1,600 roentgens will have no effect on others. The beneficial effects were due at least in part to the effect of irradiation on the basophilic infiltration, as basophilic hypophysial tumors are known to be radiosensitive. Much more investigation will be necessary before the value of the antidiuretic tests in the treatment of hypertension and in the retention of catamenial fluid can be evaluated.

Pneumoperitoneum as Aid in Pelvic Irradiation.—When treating carcinoma of the cervix Sante displaced the intestine from the field of radiation by inducing pneumoperitoneum. He points out that with the patient in the Trendelenburg position, the air rises into the pelvis, envelops the pelvic structures and displaces the intestine to the upper portion of the abdomen. Such removal of the underlying intestinal structures from the field of radiation aids compression of the lower part of the abdomen by the treatment cone. Compression alone increases the relative depth dose. After the intestinal tract has been emptied, pneumoperitoneum is induced by inflation with air to a point somewhat greater than that ordinarily used for diagnostic pneumoperitoneum. The patient should be kept on her back in bed for the first day or until she becomes accustomed to the presence of air in the abdomen. Air is used because large amounts of it usually take ten to fourteen days for complete absorption and often the entire course of roentgen therapy can be carried out with a single filling. At most, one refill about the seventh day may be necessary. Vaginal measurements seem to indicate that irradiation of the adnexal regions is more adequate when pneumoperitoneum is induced and when the Trendelenburg position is used than when the usual method of external irradiation is employed. Constitutional reactions, even with five daily external ports and one vaginal port of irradiation, did not develop when the intestine was properly displaced and excluded from the field of irradiation.

Anesthesiology, New York

2:611-732 (Nov.) 1941

Cardiac Arrhythmias Under Cyclopropane Anesthesia. C. H. Thienes, P. O. Greeley and A. E. Guedel, Los Angeles.—p. 611.
*Preliminary Clinical Report on New Carbon Dioxide Absorbent—Baralyme. M. G. Kilborn, West Orange, N. J.—p. 621.
Failure of Various Barbiturates to Prevent Cyclopropane-Epinephrine Ventricular Tachycardia in Dog. O. S. Orth, C. P. Wangeman and W. J. Meek, Madison, Wis.—p. 628.
Volatile Anesthetics: Ether, Chloroform, Ethyl Chloride and Divinyl Ether. H. B. Stewart, Tulsa, Okla.—p. 635.
Cyclopropane Anesthesia: Report of Results in 41,690 Administrations. I. B. Taylor, Philadelphia.—p. 641.
Misuse of Epinephrine During Ether Anesthesia: Case Report. Mary Lou Byrd, New York.—p. 654.
Sudden Death During Cyclopropane Ether Anesthesia Following Administration of Epinephrine: Case Report. M. H. Adelman, New York.—p. 657.
Studies on Detoxication of Local Anesthetics: Comparison of Protective Effects of Sodium, Potassium and Calcium Salts. H. Wastl, Philadelphia.—p. 661.
Regional Anesthetic Procedures Around Vertebral Column. T. H. Seldon, Rochester, Minn.—p. 669.

New Carbon Dioxide Absorbent.—Kilborn states that a new carbon dioxide absorbent, Baralyme, has been used for more than 1,000 patients given cyclopropane for surgical anesthesia. The results show that Baralyme has the following advantages over soda lime: Its efficiency is greater. The concentration of carbon dioxide is practically zero per cent up to the time of beginning exhaustion. No rest periods are needed. Its noncaustic quality removes the hazard of burns of the face and mucous membranes. The lower heat generation of Baralyme (110 F. as against 154 F. for soda lime) means less heat reflection back to the patient, especially in the to and fro method. A high concentration of carbon dioxide while Baralyme is used indicates exhaustion. No false temporary peak occurs, and the possibility of discarding the absorbent prematurely is precluded. The life of Baralyme per unit of volume averages 35 per cent longer than that of soda lime. Baralyme does not emit an unpleasant odor.

Annals of Internal Medicine, Lancaster, Pa.

15:783-952 (Nov.) 1941

Fat Metabolism in Diabetes Mellitus. W. C. Stadie, Philadelphia. —p. 783.
Studies of Factors Concerned in Edema Formation: II. Hydrostatic Pressure in Capillaries During Edema Formation in Right Heart Failure. G. Fahr and I. Ershler, Binghamton, N. Y.—p. 798.
Influenza. F. L. Horsfall Jr., New York.—p. 811.
Principles Underlying Treatment of Cardiovascular Syphilis. U. J. Wile, Ann Arbor, Mich.—p. 817.
*Hypertensive Heart Disease of Ten to Twenty Years' Duration: Report of Eleven Cases. N. Flaxman, Chicago.—p. 821.
Morphine Abstinence Syndrome, Its Nature and Treatment. C. K. Himmelsbach, Lexington, Ky.—p. 829.
Local and Regional Injection Treatment of Low Back Pain and Sciatica. E. A. Brav and H. Sigmond, Philadelphia.—p. 840.
*Screening for Tuberculosis in the Civilian Population by Fluorography. B. H. Douglas and C. C. Birkelo, Detroit.—p. 853.
Familial Acholuric Jaundice Associated with Bone Changes. E. L. Cooper, Melbourne, Australia.—p. 858.
*Neurologic, Medical and Biochemical Signs and Symptoms Indicating Chronic Industrial Carbon Disulfide Absorption. F. H. Lewey, Philadelphia.—p. 869.
Solubility of Acetylsulfapyridine and Acetylsulfathiazole in Urine. A. C. Curtis and S. S. Sobin, Ann Arbor, Mich.—p. 884.
Arsenical Sensitivity and Vitamin C. M. H. Delp and C. J. Weber, Kansas City, Kan.—p. 890.

Hypertensive Heart Disease of Long Duration.—Flaxman presents histories of 11 patients who lived ten to twenty (average thirteen and seven-tenths) years after the first appearance of hypertensive heart disease at 56, 64, 52, 55, 35, 39, 47, 61, 50, 25 and 34 years, respectively. These patients escaped the usual unpredictable and uncontrollable causes of death (cerebral hemorrhage, coronary thrombosis and uremia) in hypertensive heart disease. Physical incapacity, the first factor, was not too great in the patients because their congestive heart failure was controlled by digitalis and none had the anginal syndrome. The character of the patient's work, the second factor, was important in only *2*, a laborer and a salesman (of the other 8, 6 were housewives and *2* were unemployed). The salesman worked for ten years after his symptoms appeared, but being his own employer he worked only enough to support himself. The laborer worked for fifteen of twenty years at a highly seasonal occupation, being employed probably not more than six months out of every year. Another consideration that entered into the reasons why these *2* patients continued to work was that they had no fear of heart disease as an incapacitating or a fatal ailment. The influence of disability insurance as an incapacitating factor need not be considered, as none of the patients had any policies. Disability in heart disease depends on the attitude of the patient in relation to his work and activity, and on the type and severity of his symptoms as related to necessary effort.

Screening for Tuberculosis in the Civilian Population.—Douglas and Birkelo, from their experience with the 4 by 5 inch fluorograph of the chest of 15,220 persons, conclude that the method is reasonably accurate for detecting pulmonary tuberculosis. Surveys of community groups are definitely profitable, as many previously unrecognized cases are discovered. They believe that a wider application of the method will aid in the control of tuberculosis. Of the 15,220 fluorographs, 8,322 were taken during the Brewster project; 4,727 were of pregnant women, 751 were of housekeepers and 1,420 were of young persons selected for the National Youth Administration. The fluorographs revealed a total of 163 cases of pulmonary tuberculosis, 121 in the first, 29 in the second, 4 in the third and 9 in the fourth group of persons examined. The tuberculosis was primarily active in 27, minimal in 45, moderately advanced in 42, far advanced in 32 and miliary in 3, and in 14 there was pleurisy with effusion.

Carbon Disulfide Absorption.—Lewey applies the term "chronic carbon disulfide absorption" to the syndrome observed in 120 viscose rayon workers. All but 3 of the workers were working at the time of the examination and did not consider themselves ill, although they admitted various complaints when specifically questioned. No one symptom or sign was characteristic of the absorption, but signs of peripheral and cranial nerve involvement were elicited in 76 per cent, psychic symptoms (sleeplessness and bad dreams followed by fatigue, listlessness and loss of initiative) in 71 per cent, optic signs in 54 per cent, tremor in 33 per cent and pyramidal and extrapyramidal signs in 21 per cent. The total serum cholesterol was often definitely increased and the esters were simultaneously decreased. The thiamine excretion tended to be low. The spinal fluid was normal. The hypothesis offered (supported by experiments on dogs) is that the mechanism of chronic carbon disulfide absorption is different from that of acute carbon disulfide intoxication. The first is attributed to thiamine deficiency, possibly by way of hepatic damage and by direct poisoning of the coenzymes of nerve metabolism and respiration, whereas the second is compared to the narcotic effect of other gaseous anesthetics. A diet rich in vitamin B in the cafeterias of plants using carbon disulfide is recommended.

Archives of Neurology and Psychiatry, Chicago

46:947-1122 (Dec.) 1941

Innervation and "Tonus" of Striated Muscle in Man. P. F. A. Hoefer, New York.—p. 947.
Diagnosis and Management of Subarachnoid Hemorrhage. I. J. Sands, Brooklyn.—p. 973.
Sympathetic Nervous System: Influence on Sensibility to Heat and Cold and to Certain Types of Pain. O. R. Hyndman and J. Wolkin, Iowa City.—p. 1006.
Regulation of Treatment of Epilepsy by Synchronized Recording of Respiration and Brain Waves. R. S. Schwab, A. Grunwald, Boston, and W. W. Sargant, London, England.—p. 1017.
Injection of Procaine into Brain to Locate Speech Area in Left-Handed Persons. W. J. Gardner, Cleveland.—p. 1035.
Amyotrophic Lateral Sclerosis: Origin and Extent of Upper Motor Neuron Lesion. C. Davison, New York.—p. 1039.
Ruptured Aneurysm of Left Anterior Cerebral Artery with Production of Ipsilateral Cerebral Signs. M. T. Moore and A. A. Bockman, Philadelphia.—p. 1057.
*Vitamin E and Alpha Tocopherol Therapy of Neuromuscular and Muscular Disorders. R. N. DeJong, Ann Arbor, Mich.—p. 1068.
New Approach in Induction of Infraorbital Nerve Block. P. G. Skillern, South Bend, Ind.—p. 1076.

Neuromuscular and Muscular Disorders.—DeJong has used alpha tocopherol and wheat germ oil in treating 19 patients with amyotrophic lateral sclerosis, 1 with amyotrophic lateral sclerosis associated with syphilis, 5 with progressive spinal muscular atrophy, 8 with pseudohypertrophic muscular dystrophy and *2* with recent extensive poliomyelitis. The only outstanding clinical changes in amyotrophic lateral sclerosis and progressive spinal muscular atrophy with progressive bulbar paralysis have been a slight decrease in the fibrillary tremors, a feeling of well-being, a slight gain in weight and in some patients a subjective temporary increase in muscular strength. Large doses of alpha tocopherol were of no benefit in far advanced muscular dystrophy. There was no definite acceleration of improvement in poliomyelitis and no regeneration of atrophic muscles. Amyotrophic lateral sclerosis, progressive spinal muscular atrophy and progressive bulbar paralysis are degenerative diseases, and the atrophy in them is secondary to degeneration of the motor neurons. Therefore, regeneration of such muscles can follow only after the motor neurons are regenerated.

Archives of Pathology, Chicago

32:889-1060 (Dec.) 1941

*Influence of Sodium Bicarbonate in Preventing Renal Lesions from Massive Doses of Sulfathiazole. D. R. Climenko, O. W. Barlow, Rensselaer, N. Y., and A. W. Wright, Albany, N. Y.—p. 889.
Osteosclerosis with Extensive Extramedullary Hemopoiesis and Leukemic Blood Reaction: Case. H. E. Jordan and J. K. Scott, Charlottesville, Va.—p. 895.
Development of Newborn Rat Ovaries Implanted in Anterior Chambers of Adult Rats' Eyes; Adult Rats Used: Normal, Gonadectomized, and Gonadectomized Treated with Chorionic Gonadotropin. Lucia J. Dunham, Ruth M. Watts and F. L. Adair, Chicago.—p. 910.
*Poliomyelitis Induced by Lansing Strain of Virus: Comparison of Lesions in Man and Monkeys. J. H. Peers, Bethesda, Md.—p. 928.
Nerves of Adult Human Endometrium. D. State and E. F. Hirsch, Chicago.—p. 939.
Relation of Nephrosis and Other Diseases of Albino Rats to Age and to Modifications of Diet. J. A. Saxton Jr., New York, and Grace C. Kimball, Ithaca, N. Y.—p. 951.
Unilateral Renal Atrophy Associated with Hypertension. A. H. Baggenstoss and N. W. Barker, Rochester, Minn.—p. 966.
The "Nerveless" Spinal Cord: New Artefact. H. W. Edmonds, Boston.—p. 983.
Myocarditis: General Review, with Analysis of 240 Cases. O. Saphir, Chicago.—p. 1000.

Lesions from Sulfathiazole.—According to Climenko and his co-workers, the daily medication with 1 Gm. of sulfathiazole per kilogram of body weight caused the death of 4 of 5 adult Macacus monkeys during the course of medication, which was

planned to be continued for twenty-eight days. The kidneys of the animals were edematous and moderately congested. On section, there were collections of crystalline material in the larger collecting tubules. Five other animals on the same dose level of sulfathiazole which were given also a gram for gram equivalent of sodium bicarbonate survived the twenty-eight days of medication without any untoward signs but moderate diarrhea. Two of these animals were killed on the twenty-ninth day, and no gross pathologic lesions were observed in the kidneys at necropsy. On section, the kidneys revealed slight acute congestion. The lumens of the convoluted tubules contained fluid and small accumulations of hyaline bodies, which in no way resembled the crystalline material seen in the animals given sulfathiazole alone. Foci of acute inflammation were not found. The clearcut differences between the two groups of animals cannot be accounted for in terms of difference in blood concentration, for the simultaneous administration of an alkali with sulfathiazole tends to improve the absorption of the drug from the gastrointestinal tract. The difference was evidently dependent on the hydrogen ion concentration of the urine. From previous experimental work, the authors know that the amount of sodium bicarbonate given 5 monkeys maintained the p_H of the urine between 7.2 and 7.4. They suggest that in clinical practice a sufficient amount of sodium bicarbonate (or another suitable alkali) to maintain the urine on the neutral alkaline side should be used with sulfathiazole medication. Sulfathiazole and its conjugated derivative acetylsulfathiazole are many times more soluble in alkaline mediums than they are in acid mediums. Alkalinity of the urine prevents precipitation of the drug in the kidney, and thus the formation of local lesions is prevented.

Lansing Poliomyelitis.—Peers observed that the pathologic lesions in the brain of a youth of 19 in whom poliomyelitis due to the Lansing strain of the virus developed were essentially similar to those produced in monkeys by the virus isolated from the cerebral tissue of the youth. In spite of the supposedly low susceptibility of monkeys, the disease in them was anatomically more severe than in the human subject. The difference is really great, as all the animals were killed when paralysis was well established rather than after the disease had run its natural course. Since the intracerebral route of inoculation was used the severe lesions observed in the cortex and basal ganglions may be accounted for, but the extensive damage in the midbrain, cerebellum and medulla is not so easily explained. The pattern of the fully developed disease was essentially identical in man and in the monkey, though the route of inoculation was obviously different.

Bulletin of Johns Hopkins Hospital, Baltimore

69:397-492 (Nov.) 1941

*Relation Between Concentration of Total Protein and of Globulin in Urine and Pathogenesis of Certain Renal Lesions in Bright's Disease. S. S. Blackman Jr., W. E. Goodwin and Mary V. Buell, with technical assistance of I. Yaffe and I. Miller, Baltimore.—p. 397.
Myasthenia Gravis Complicated by Thyrotoxicosis: Creatine Studies: Case Report. G. W. Thorn and N. A. Tierney, Baltimore.—p. 469.
Riboflavin Excretion Test as Measure of Riboflavin Deficiency in Man. V. A. Najjar and L. E. Holt Jr., Baltimore.—p. 476.
Poison Ivy Dermatitis: I. Diagnostic Value of Patch Test Made with Ether Extract from Fresh Leaves and Stems of Poison Ivy Plant. E. L. Keeney, S. Sunday, L. N. Gay and K. Lynch, Baltimore.—p. 482.

Protein in Urine and Bright's Disease.—Blackman and his associates demonstrate a relation between the concentration of total protein and of globulin in the urine and the development of renal insufficiency in patients with Bright's disease. The determination of these concentrations in 42 patients indicated that in the patients who recovered, and in others during periods when renal function remained stationary, either the urine usually contained a small amount of protein (less than 0.5 Gm. per hundred grams of tissue) or if a larger proportion of protein was present there was only a small proportion of globulin (less than 35 per cent). The urine of patients in whom progressive renal failure developed more often contained a higher concentration of protein, of which a larger proportion was more often found to be globulin. In patients with the chronic form of the disease the more often both total protein and globulin were found in high concentration the more rapid was the progress of renal insufficiency.

Bulletin New York Academy of Medicine, New York

17:885-964 (Dec.) 1941

Arteriosclerosis. T. Leary, Boston.—p. 887.
Coronary Insufficiency: Observations on Diagnosis and Treatment. R. L. Levy, New York.—p. 898.
Psychopathology of Psychopathic Personalities. G. S. Sprague, White Plains, N. Y.—p. 911.
Influence of Climate and Geography on Health. C. A. Mills, Cincinnati.—p. 922.
The Doctor in Court. P. J. McCook, New York.—p. 934.
Founding of New York Laryngological Society. S. R. Kagan, Boston. —p. 946.

California and Western Medicine, San Francisco

55:225-278 (Nov.) 1941

Administrative Psychiatry. A. J. Rosanoff, Sacramento.—p. 232.
Tumors of Small Intestine. W. A. Morrison and D. Donath, Los Angeles.—p. 235.
Estrogens: Their Use in Pediatrics. W. A. Reilly, San Francisco. —p. 237.
Cancer of Prostate: Report of Thirty-Four Cases Seven and Eight Years After Treatment by Transurethral Resection. H. C. Bumpus Jr., Los Angeles.—p. 239.
Powdery Mildews as Allergens. V. G. Alderson and Lucile R. Mason, Oakland.—p. 241.
Common Duct Lesions: Their Surgical Management. L. A. Alesen, Los Angeles.—p. 243.
*Syphilis: Five Day Treament. N. N. Epstein, San Francisco. —p. 248.
Recurrent Lymphangitis: Report of Case with Unusual Features. W. H. Goeckerman and L. F. X. Wilhelm, Los Angeles.—p. 251.

Five Day Treatment of Syphilis.—From an analysis of the published results of the five day intravenous drip method of treating early syphilis Epstein concludes that the method is entirely experimental and should be employed only in properly equipped and adequately staffed institutions. The method sterilizes the infectious lesions of early syphilis within twenty-four to forty-eight hours. Since only five days are required for the treatment all patients complete the course, in contrast to the 20 to 80 per cent of the patients treated by the usual methods who disappear from observation before therapy is completed. Satisfactory therapeutic results are as frequent as with other methods now in use. The technic accomplishes the primary aim of Ehrlich. The disadvantages of massive arsenotherapy in early syphilis are that: The treatment is still in the experimental stage. It is a hospital procedure and entails considerable expense. Sufficient time has not elapsed to evaluate its final results and the toxic end effects. Neoarsphenamine is too toxic to be practical, and the therapeutic results obtained with mapharsen have not been as satisfactory as those following the use of neoarsphenamine. The method has been employed only for male patients with early syphilis. No data are available on its value in female patients, for latent syphilis or for the numerous manifestations of late syphilis. The author disagrees with the statement that 2 instances of hemorrhagic encephalitis with 1 death among the 350 patients so treated is not excessive.

Georgia Medical Association Journal, Atlanta

30:457-492 (Nov.) 1941

Clinical Studies on Secondary Anemia. A. H. Bunce, M. S. Dougherty Jr. and R. C. Davis, Atlanta.—p. 457.
Air Embolism: Report of Two Cases. J. G. McDaniel, Atlanta.—p. 462.
The So-Called Psychopathic Personality, with Special Emphasis on His Status in Selective Service. H. Cleckley, Augusta.—p. 466.
Influenzal Meningitis: Report of Case. Helen W. Bellhouse, Thomasville.—p. 472.
Blood Sedimentation Test. E. B. Agnor, Atlanta.—p. 474.
Second X-Ray Study. M. Johnson, Atlanta.—p. 476.

Indiana State Medical Assn. Journal, Indianapolis

34:659-728 (Dec.) 1941

Sulfonamide Compounds: Their Uses and Principles of Therapy. W. D. Province, New York.—p. 659.
Massive Arsenotherapy in Syphilis. G. W. Bowman and F. G. Sheehan, Indianapolis.—p. 665.
Organized Medicine and Tuberculosis. B. Goldberg, Chicago.—p. 669.
Carcinoma of Prostate: New Methods of Management and Treatment. J. F. Balch, Indianapolis.—p. 672.
Youth Health and Democracy. R. L. Sensenich, South Bend.—p. 674.
Regional Ileitis. H. C. Wallace, Crawfordsville.—p. 677.
The Sexual Problem. M. Miller, Evansville.—p. 682.

Journal of Allergy, St. Louis

13:1-104 (Nov.) 1941

Serologic Changes After Oral Ragweed Pollen Therapy in Children. S. J. Levin, Detroit, and Lillian Shulsky, Brooklyn.—p. 1.
*Clinical Study of Histamine Azoprotein in Allergic Disease: Preliminary Report. J. M. Sheldon, N. Fell, J. H. Johnson and H. A. Howes, Ann Arbor, Mich.—p. 18.
Critical Interpretation of Data on Incidence of Air-Borne Allergens. O. C. Durham, Chicago.—p. 31.
Appearance of Pollen in Stool. E. L. MacQuiddy, Omaha.—p. 41.
*Speed of Action of So-Called "Slow Epinephrine" (in Oil). L. C. Bacon, M. Stickler and R. W. Lamson, Los Angeles.—p. 48.
Seasonal and Geographic Influences on Food Allergy, A. H. Rowe, Oakland, Calif.—p. 55.
*Sensitivity of Man to Human Dander, with Particular Reference to Eczema (Allergic Dermatitis). S. F. Hampton, St. Louis, and R. A. Cooke, New York.—p. 63.
Investigation of Question of Histamine Tolerance. J. A. Wells, J. S. Gray and C. A. Dragstedt, Chicago.—p. 77.
Investigations on Presence of Forssman Antigen in Ragweed Pollen. C. Arbesman and E. Witebsky, Buffalo.—p. 85.
Allergic Asthma and Rhinitis Due to Kamala Powder. M. London, Cleveland.—p. 92.

Allergic Disease.—Sheldon and his associates used histamine-azo-despeciated horse serum globulin for the treatment of 76 patients having atopic eczema, contact dermatitis, physical allergy, seasonal hay fever, perennial allergic rhinitis, gastrointestinal allergy or migraine headache. Many of the subjects manifested two or more types of allergic symptoms. The histamine azoprotein was tested intracutaneously in doses of 0.02 cc., and if a delayed reaction was absent the first treatment consisted of giving 0.05 cc. of undiluted histamine azoprotein subcutaneously in the deltoid area. Each subsequent dose, given twice a week, was increased by 0.5 cc. until symptomatic relief was obtained, or until a 1 cc. dose was reached. The initial dose for patients with delayed reactions was greatly reduced, and subsequent increases were guided by symptomatic improvement or the local reaction. No important local or systemic reactions followed the use of histamine azoprotein. The therapeutic results were sufficiently good to warrant further investigation. Best results were obtained by patients with physical allergy and cutaneous hypersensitivity. Two asthmatic patients, in whom asthma could be induced by exposure to cold, were relieved after three weeks of treatment. Asthma can no longer be produced in these 2 subjects. One patient, so sensitive to sunlight that she was confined to her home during daytime, is now able to do as she desires. In the few patients with contact dermatitis the cause was limited to but a few substances, but it appears that histamine azoprotein in conjunction with local treatment has more to offer than any other form of therapy. The patients with atopic eczema seemed to show definite benefit from histamine azoprotein therapy. Patients with seasonal ragweed hay fever were benefited as much as were similar control patients receiving specific ragweed desensitization in 1940. Histamine-azo-despeciated horse serum globulin is not offered as a panacea for allergic diseases.

Speed of Action of "Slow Epinephrine."—From their observations following one hundred and twenty injections of "slow epinephrine" (in oil) given to 36 ambulatory patients Bacon and his colleagues conclude that epinephrine in oil is not slow in its action, that the time between its administration and its pharmacologic effect compares favorably with equivalent doses of aqueous epinephrine and that contrary to the general belief small doses of epinephrine in oil frequently are effective. There was a response within fifteen minutes after nine of fourteen injections of 0.2 cc. of epinephrine in oil, within ten minutes after sixteen of twenty-six injections of 0.3 cc., within ten minutes after twenty-three of forty-four injections of 0.5 cc., within ten minutes in eleven (within fifteen minutes after twenty-three) of thirty-three injections of 0.6 to 0.8 cc. and within ten minutes after fifteen of twenty-five injections of 1 to 1.5 cc.

Sensitivity to Human Dander.—Hampton and Cooke present studies which suggest that sensitivity to human dander and eczema are related, that is, that the sensitivity is the result rather than the cause of eczema. They observed that the skin of 30 of 33 patients with eczema reacted to human dander extract and that the serum contained skin-sensitizing antibodies for it. Patients with eczema usually showed positive reactions, while noneczematous persons usually showed negative reactions. The serum of only 10 of 90 patients with allergic diseases other than eczema contained skin-sensitizing antibodies. The serum of 10 normal, nonallergic patients did not contain skin-sensitizing antibodies. Only 3 of 75 patients with dermatoses other than eczema reacted significantly to human dander extract. As no relationship was found between sensitivity to human dander and that to other animal danders, it appears that general sensitivity to a component, such as keratin, common to all animal danders does not exist. If the sensitivity to human dander is based on extensive or prolonged inflammation of the skin only the patient with an allergic constitutional background is capable of producing the antibodies to human dander extract. Consequently, persons with eczema, being allergic, produce these antibodies, while those with psoriasis, seborrhea, tinea and exfoliative dermatitis, being nonallergic, do not. This view is supported by the fact that sensitivity to human dander was found in 1 patient with psoriasis and in 1 with tinea, both allergic but without eczema.

Journal of Lab. and Clinical Medicine, St. Louis

27:131-278 (Nov.) 1941. **Partial Index**

*Toxic Reactions to Sulfapyridine: Acute Hemolytic Anemia, Leukemoid Reaction and Purpura in Three Separate Cases. A. A. Goldbloom, L. Greenwald and H. Reinstein, New York.—p. 139.
Pleural Shock—a Reflex: Preliminary Report. W. L. Mersheimer and M. L. Colmer, New York.—p. 148.
*Endocrine Aspects of Headaches. M. A. Goldzieher, New York.—p. 150.
Cardiospasm: Observations on Use of Prostigmine: Clinical and Experimental Report. J. Meyer and H. Necheles, Chicago.—p. 162.
Chronic, Atrophic Type of Brucellosal Arthritis. E. Goldfain, Oklahoma City.—p. 168.
*Multiple Invasion of Blood Stream. A. Kanof and B. Kramer, Brooklyn.—p. 173.
Multiple Serum Allergy in Atopic Individuals. A. I. Kleinman and H. Markow, Brooklyn.—p. 187.
Prothrombin Studies Using Russell Viper Venom: II. Relation of Clotting Time to Prothrombin Concentration in Human Plasma. R. C. Page, E. J. de Beer and Martha L. Orr, New York.—p. 197.
Significance of Xanthroprotein Reaction in Renal Insufficiency and Other Clinical Conditions. O. B. Ragins, Ida Kraus and G. C. Coe, Chicago.—p. 201.
Effect of Anaphylactic Shock on Blood Potassium and Concentration. L. W. Kinsell, East Stroudsburg, Pa., and R. L. Zwemer, New York.—p. 206.

Toxic Reactions to Sulfapyridine.—Goldbloom and his associates observed unusual toxic reactions of the blood to sulfapyridine, varying grades of the leukemoid blood picture and associated secondary thrombocytopenic purpura in 3 patients with acute hemolytic anemia. In spite of these reactions, the patients recovered in a short time after transfusions of blood were given. Studies of the bone marrow showed erythroblastic hyperactivity in 2 patients. The authors believe that the decided hemolytic anemia may be evidence of a peripheral action, the leukocytosis an irritation of the myeloid element of the bone marrow and the thrombocytopenic purpura an allergic phenomenon. The reactions in their patients emphasize the importance of making frequent blood counts for any patient receiving sulfapyridine.

Endocrine Aspects of Headaches.—Goldzieher investigated the possible causal relationship between endocrinopathies and attendant metabolic disorders in 50 consecutive patients with severe headaches. All the patients, including the few whose headaches were not typically migrainous, had no organic or systemic disease as a possible cause of the headaches. Chemical studies, determination of the basal metabolism and observation of the daily urinary output show evidence of a general trend of retention of sodium chloride and water and frequent stigmas pointing to an endocrine background. These stigmas were a lowered basal metabolism, a decreased specific dynamic action of proteins, a relative lymphocytosis, a high value for uric acid, sodium and chloride in the blood, a low blood sugar level and abnormalities in the configuration of the sella turcica. Endocrine headaches, including migraine headaches, are explained as the result of increased intracranial pressure. They develop when an increased permeability of the capillaries permits an increased flow of water to, and subsequent retention in, the tissues in which abnormal quantities of sodium salts have been stored. The successful treatment of endocrine headaches consists of a high

protein diet with a restricted intake of salt, liquid and carbohydrate, of medication with ammonium or potassium salts and belladonna preparations, and of remedying the endocrine deficiency with thyroid and pituitary extracts.

Multiple Invasion of Blood Stream.—Kanof and Kramer found more than one organism in the blood stream of 24 children with bacteremia during hospitalization. These 24 patients represent 8 per cent of the 320 patients with bacteremia encountered during five years. There were 9 patients with true mixed septicemia, 5 with septicemia complicated by secondary bacteremia and 10 with spurious mixed septicemia, in which the second organism was a variant of the first or in which a casual invader appeared in the course of sepsis. It appears that once the resistance of the body to invasion of the blood stream is overcome any number of organisms may follow the first invader. The immunologic changes which permit the onset of sepsis are specific for one organism. Invasion by more than one organism rarely takes place, but when it does occur it is observed only in extremely young infants and invariably has a fatal outcome. Two points of special clinical interest are the appearance of an erysipeloid rash when hemolytic streptococcemia is superimposed on existing sepsis and the difference in the clinical course of true mixed septicemia and septicemia complicated by secondary bacteremia. When two organisms are present in the same blood an unusually long incubation period is followed by a short, acute course that terminates rapidly in death, but when the second invasion is complicated by primary sepsis the incubation period is short. The illness is characterized by two septic periods separated by an afebrile period; the second is coincidental with the second invasion.

Journal of Nat. Cancer Inst., Washington, D. C.

2:99-200 (Oct.) 1941

Studies in Carcinogenesis: XV. Compounds Related to 20-Methylcholanthrene. M. J. Shear and J. Leiter, with assistance of A. Perrault.—p. 99.
Identification of Cells from Induced and Spontaneous Leukoses of Dilute Brown Mice. Margaret Reed Lewis, Baltimore, and G. B. Mider, Bethesda, Md.—p. 115.
Spontaneous Regression of Myelomas and of Their Metastatic Growths. Margaret Reed Lewis, Baltimore, and G. B. Mider, Bethesda, Md.—p 123.
Relationship Between Susceptibility to Induced Pulmonary Tumors and Certain Known Genes in Mice. W. E. Heston.—p. 127.
Program for Research on Biology of Human Cancer. C. C. Little, Bar Harbor, Maine.—p. 133.
Hepatic Changes and Subcutaneous and Pulmonary Tumors Induced by Subcutaneous Injection of 3,4,5,6-Dibenzcarbazole. H. B. Andervont, Washington, D. C., and J. E. Edwards.—p. 139.
Intrapulmonary Transplantation of Adenomatous Gastric Lesion of Strain I Mice. H. B. Andervont, Washington, D. C., and M. B. Shimkin, Bethesda, Md.—p. 151.
Pathologic Changes, with Special Reference to Pigmentation and Classification of Hepatic Tumors in Rats Fed *p*-Dimethylaminoazobenzene (Butter Yellow). J. E. Edwards and J. White.—p. 157.
Effect of Carcinogens on Small Organisms: III. Cell Division Rate and Population Levels of Methylcholanthrene-Adapted Paramecia. R. R. Spencer, Bethesda, Md., and M. B. Melroy.—p. 185.
Induction of Adenocarcinoma of Pyloric Stomach in Mice by Methylcholanthrene: Preliminary Report. H. L. Stewart, Bethesda, Md., and E. Lorenz.—p. 193.
Hepatomas in Mice Induced with Carbon Tetrachloride. J. E. Edwards.—p. 197.

Kansas Medical Society Journal, Topeka

42:457-500 (Nov.) 1941

Confusion in Differentiation of Heart Murmurs and Sounds. A. L. Smith, Lincoln, Neb.—p. 457.
Active Treatment of Tuberculous Pulmonary Cavities by Surgery. J. E. Dailey, Houston, Texas.—p. 462.
Undulant Fever. R. T. Westman, Kansas City.—p. 468.
Adrenal Cortex Carcinoma. A. J. Retenmaier, M. S. Allen, Kansas City, and E. D. Liddy, Lawrence.—p. 471.
*Clinical Observations on Use of Deproteinated Pancreatic Tissue Extract in Surgical and Routine Catheterization. H. E. Neptune, Salina.—p. 474.
Acute Staphylococcic Infections of Kidney. W. G. Gordon, Kansas City.—p. 478.

Deproteinated Pancreatic Tissue Extract with Catheterization.—Neptune used a deproteinated extract of pancreatic tissue to facilitate relaxation of the ureters for the catheterization of 4 patients with renal colic and of 30 patients requiring retrograde pyelography. Postinstrumental colic was not encountered, and there were no local reactions or untoward effects.

Medical Annals of District of Columbia, Washington

10:371-418 (Oct.) 1941

Control of Anginal Syndrome with Low Carbohydrate Diet. B. P. Sandler, New York.—p. 371.
Cold Pressor Test. J. A. Reisinger, Washington.—p. 381.
Deafness: Consideration of Its Causes. W. A. Wells, Washington.—p. 387.
Auscultatory Percussion: Modification Useful in Determining Cardiac Outline in Infants and Young Children. D. J. Abramson, Washington.—p. 393.
Educational Campaign on Menace and Control of Acute Appendicitis. E. A. Cafritz, Washington.—p. 395.

10:419-458 (Nov.) 1941

Health and Civilian Defense. F. H. LaGuardia, New York.—p. 419.
Health of Nation as Revealed by Selective Service. L. G. Rowntree, Washington.—p. 425.
Public Health and National Defense. W. F. Draper, Washington.—p. 429.
Medical Field Service in Modern Combat. J. C. Magee, Washington.—p. 433.
Aviation Medicine in the Navy. R. T. McIntire, Washington.—p. 437.

Michigan State Medical Society Journal, Muskegon

40:841-936 (Nov.) 1941

Carcinoma of Stomach: Diagnosis and Results. J. T. Priestley, Rochester, Minn.—p. 867.
*Effect of Oral Administration of Diethylstilbestrol on Menopausal Symptoms. J. W. Peelen, Kalamazoo.—p. 873.
Modern Treatment of Traumatic Shock. H. A. Hanelin, Marquette.—p. 876.
End to End Anastomosis: Mathematical Approach to Causes of Marginal Gangrene. A. H. Mollmann, Grand Rapids.—p. 882.
Experiences in Premarital Council in Private Practice. R. N. Pierson, New York.—p. 884.

Menopausal Symptoms.—Peelen gave diethylstilbestrol orally to 30 patients with menopausal symptoms. The drug was taken for fourteen days to ten months. The initial daily dose was 1 mg. This was reduced shortly afterward to 0.5 mg. daily. The latter dose was to be taken for two weeks, but if nausea developed it was to be discontinued for one day and then resumed the next day. The menopausal flushes were usually held in abeyance after one week of treatment. The maintenance dose was then determined, and in most instances three to seven 0.5 mg. capsules weekly were sufficient. There was no consistent difference between the maintenance dose necessary to control the symptoms of surgical and that necessary in natural menopause. One patient, after only two weeks of treatment, remained free of symptoms for six months. One patient with senile vaginitis experienced relief from hot flushes with 0.5 mg. of diethylstilbestrol daily. However, the vaginitis did not improve until the dose was increased. After she had taken 1 mg. daily for ten days mature cornified epithelial cells appeared in the vaginal mucosa and the inflammation subsided. Of the remaining 28 patients 22 were relieved, 3 were partially relieved and 3 experienced no relief. Two of the 30 patients were unable to take the drug because of nausea and vomiting. These manifestations disappeared within twenty-four hours after the drug was withdrawn but recurred promptly when diethylstilbestrol was again administered. Three patients experienced slight nausea when diethylstilbestrol was given daily, but reducing the dose to 0.5 mg. two to four times a week relieved the flushes and the nausea did not recur. One patient had headaches when taking 0.5 mg. of diethylstilbestrol daily but had no difficulty when the same amount was taken on alternate days, and she continued to remain almost completely free from her previous menopausal symptoms.

Missouri State Medical Assn. Journal, St. Louis

38:365-392 (Nov.) 1941

What Is the Matter with the Patient Who Is Chronically Tired? W. C. Alvarez, Rochester, Minn.—p. 365.
Treatment of Chronic Arthritis. R. L. Cecil, New York.—p. 368.
Modern Treatment of the Mentally Ill. A. E. Bennett, Omaha.—p. 370.
Use of Laboratory Data in Clinical Medicine. M. Bodansky, Galveston, Texas.—p. 373.
Surgical Care of Fresh Traumatic Wounds. Jean M. Stevenson, Cincinnati.—p. 378.
Toxic Goiter: Practical Lessons Learned from a Fifteen Year Mortality Study. R. W. Bartlett and W. Bartlett Jr., St. Louis.—p. 381.
Surgery in Tuberculosis. C. J. Mellies, Mount Vernon.—p. 383.

New England Journal of Medicine, Boston

225:763-804 (Nov. 13) 1941

Study of Influenza in Boston During Winter of 1940-1941. H. E. Pearson, E. C. Eppinger, J. H. Dingle and J. F. Enders, Boston. —p. 763.
Conditioned Reflex of Pavlov: Physiologist's Point of View. R. G. Hoskins, Boston.—p. 770.
Id.: Practical Clinical Applications, Especially to Children. H. L. Higgins, Boston.—p. 772.
Id.: Conditioned Behavior. G. E. Gardner, Boston.—p. 775.
Postpartum Care: Preliminary Report of Studies in Follow-Up Clinic. C. W. Sewall and O. C. Mullaney, Boston.—p. 777.
Cardiology: I. Chemotherapy in Heart Disease. II. False Diagnosis of Organic Heart Disease. H. L. Blumgart, Boston.—p. 782.

225:805-844 (Nov. 20) 1941

Conservative Treatment of Occlusive Arterial Disease. I. S. Wright, New York.—p. 805.
Postoperative Follow-Up Study of 469 Thyrocardiac Patients. A. M. Greene and L. M. Hurxthal, Boston.—p. 811.
Pollen Disease in Absence of Positive Skin Tests. A. Colmes, Boston. —p. 817.
Treatment of Meningitis. M. Finland and J. H. Dingle, Boston. —p. 825.

New York State Journal of Medicine, New York

41:2179-2274 (Nov. 15) 1941

Significance of Muscular Balance in Acute Disorders of Posture and Locomotion. H. H. Jordan, New York.—p. 2203.
Various Forms of Shock Therapy in Mental Disorders and Their Practical Importance. L. B. Kalinowsky, New York.—p. 2210.
General Practitioner's Part in Campaign for Prevention of Blindness from Glaucoma. M. J. Schoenberg, New York.—p. 2216.
Recent Advances in Gynecologic Hormone Therapy. S. H. Geist and U. J. Salmon, New York.—p. 2220.
Multiple Necrotizing Skin Lesions in Chronic Ulcerative Colitis. J. Felsen, New York.—p. 2228.
Sodium Phosphate in Treatment of Diabetes: Clinical Study. B. Joseph, New York.—p. 2232.
Resin Dermatitis from New Pajamas and New Shorts. A. G. Gould, A. B. Berresford and N. S. Moore, Ithaca.—p. 2236.

North Carolina Medical Journal, Winston-Salem

2:579-634 (Nov.) 1941

The Sick Individual as Biologic Problem. W. deB. MacNider, Chapel Hill.—p. 579.
Bowman Gray School of Medicine of Wake Forest College. T. T. Mackie, New York.—p. 582.
Correlation Between Blood Pressure and Concentration of Sulfocyanates in Blood. V. S. Caviness, T. A. Bell and G. H. Satterfield, Raleigh.—p. 585.
Virus Diseases Affecting Eye and Adnexa. W. B. Anderson, Durham. —p. 592.
Serologic Survey of Draft Registrants. J. H. Hamilton, Raleigh. —p. 598.
Relationship of Malaria to Serologic Tests for Syphilis. F. S. Fellows, Raleigh.—p. 601.
Salivary Calculi: Method of Removing Calculi from Submaxillary Gland: Report of Two Cases. W. P. McKay, Fayetteville.—p. 605.
Practical Plan for Reduction of Infant and Maternal Mortality. C. D. Berry and R. A. Alter, Durham.—p. 607.
*Treatment of Infections of Respiratory Tract with Sulfonamides. E. E. Menefee Jr. and J. A. Speed, Durham.—p. 611.

Respiratory Infections.—According to Menefee and Speed, during the influenza epidemic of January and February 1941, 116 students at Duke University with mild influenza were treated symptomatically and 111 were given an initial dose of 2 Gm. and then 1 Gm. of sulfathiazole every four hours until the temperature had been normal for twelve hours. The average duration of fever of the 111 students from the time of admission was one and six-tenths days. The average total dose of sulfathiazole was 13.5 Gm. The average stay in the hospital was three and four-tenths days. The figures for the group treated symptomatically were at least twice as great. Thirty-four per cent of the 111 treated patients complained of nausea and a sensation of "drunkenness." However, the symptoms were severe in only 2, and 1 patient complained of pain in the region of the right kidney after receiving 15 Gm. of sulfathiazole; the drug was withdrawn and the pain disappeared forty-eight hours later. Leukopenia, hemolytic anemia, cutaneous rash, drug fever or erythema nodosum did not develop in any of the patients. Pneumonia developed in 1 patient eight days after the receiving of the drug, in 2 symptomatically treated patients and in 2 completely untreated patients.

Surgery, Gynecology and Obstetrics, Chicago

73:759-890 (Dec.) 1941

Papillary Carcinoma of Renal Pelvis: Diagnosis and Treatment. T. J. Kirwin, New York.—p. 759.
*Gastrointestinal Tract in Hyperthyroidism. R. B. Brown, E. P. Pendergrass and E. D. Burdick, Philadelphia.—p. 766.
Smooth Muscle Tumors of Gastrointestinal Tract and Retroperitoneal Tissues. T. Golden and A. P. Stout, New York.—p. 784.
Dysgerminoma Occurring in Pseudohermaphrodite. C. H. Long, J. Ziskind and A. H. Storck, New Orleans.—p. 811.
*Use of Synthetic Nonabsorbable Suture Material in Surgery: Preliminary Report. J. K. Narat, Chicago.—p. 819.
Ligamentum Flavum: Its Relationship to Low Back Pain. M. C. Mensor and F. A. Fender, San Francisco.—p. 822.
Mechanism of Ureteral Obstruction in Prolapse of Uterus. F. Lieberthal and L. Frankenthal Jr., Chicago.—p. 828.
Intussusception in Adults: Consideration of Therapeutic Measures and Case Report. H. G. Nichols, Haverhill, Mass.—p. 832.
Terminal Common Bile Duct and Duodenal Papilla: Roentgenologic Consideration. M. Feldman, Baltimore.—p. 838.
Ferrule Caps for Head of Radius. K. Speed, Chicago.—p. 845.
Malignant Thymoma: Clinical Pathologic Study of Eight Cases. C. A. Hellwig, Wichita, Kan.—p. 851.
*Common Bile Duct Peristalsis: Preliminary Report. D. Macdonald, St. Catharines, Ont., Canada.—p. 864.
Acromioclavicular Separation: New Method of Repair. B. M. Bosworth, New York.—p. 866.
Test for Median Nerve Function. R. Wartenberg, San Francisco. —p. 872.
Determination of Pyloric Patency Following Fredet-Rammstedt Operation for Congenital Hypertrophic Pyloric Stenosis. S. McLanahan, Baltimore.—p. 874.
Use of Ribbon Gut in Uterine Suspensions. D. Chanis Jr., Panama, Panama.—p. 877.
Effect of Distention on Whole Blood Specific Gravity and Whole Blood Potassium. S. B. Childs and J. Scudder, New York.—p. 880.

Gastrointestinal Tract in Hyperthyroidism.—Brown and his colleagues compared the changes in the gastrointestinal tract in 24 hyperthyroid patients and 14 normal controls and concluded that the following changes are characteristic of hyperthyroidism: (1) an increased frequency of achlorhydria, (2) an increased prominence of the gastric rugae, (3) an increase in the rapidity with which the stomach starts to empty, (4) a delay in the gastric emptying time and (5) increased tone and motility of the small and the large intestine.

Synthetic, Nonabsorbable Suture Material in Surgery.—Narat appraises the value of two nonabsorbable suture materials, zytor, or nylon, and vinyon, a derivative of resin vinylite. Each material was used in 30 unselected, consecutive, clean, major operations. The two materials were used as continuous sutures for closure of peritoneum and skin, but the fascia was sutured with interrupted stitches. There was no evidence that the tissues were irritated. At the end of seven to ten days the abdominal wounds were completely healed and there was no sign of inflammatory reaction. Vinyon or zytor and catgut were never employed together. Vinyon and zytor are extremely pliable, can be easily and repeatedly sterilized, do not fray, have a tensile strength which is not impaired when they are wet, are not attacked by pathogenic micro-organisms, are not susceptible to action of tryptic enzymes, are apparently nonallergic and are inexpensive. Investigation is necessary to establish their value in infected or contaminated wounds.

Peristalsis of Common Bile Duct.—Macdonald visualized peristalsis of the common bile duct under the fluoroscope in a man while a study was being made of a pathologic common bile duct. This was immediately recorded roentgenographically. The roentgenograms show conclusively that the possible causes of the changes in the internal diameter of the common bile duct are probably irritation by the T tube, extension of the tissue of the sphincter of Oddi into the duct and active peristalsis. Irritation could not produce such changes unless the inherent ability to contract and relax was present. It is unusual for sphincter tissue to extend so far up the duct. Therefore, in Macdonald's patient the common bile duct had the ability to move its contents onward by active effort. Fluoroscopic study showed that the shadow of the dye was changed in shape by a temporary constriction, and that some iodized oil distal to the constriction was rushed forward into the duodenum. The author believes that peristalsis should be expected in the common duct because the duct is an integral part of one of the most important physiologic functions of the body and an uninterrupted onward flow of bile is essential to good health, and that there must be some mechanism, other than back pressure, to overcome transient states of obstruction.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

25:509-552 (Nov.) 1941

Hydrophthalmia. A. Garrow and A. Loewenstein.—p. 509.
Central Retinitis in Girl Aged Eighteen Years: Recovery. Rosa Ford.—p. 521.
Retinitis Pigmentosa with Macular Dystrophy: Report of Familial Group. A. Sorsby.—p. 524.
Fifteenth Century English Translation of John of Arderne's De Cura Oculorum. R. R. James.—p. 526.

British Medical Journal, London

2:569-600 (Oct. 25) 1941

Observations on Cerebrospinal Fluid in Closed Head Injuries. J. W. A. Turner.—p. 569.
"Night Blindness"—Psychophysiologic Study. E. Wittkower and T. F. Rodger, in collaboration with G. I. Scott and B. Semeonoff.—p. 571.
Thrombosis in Arteriosclerosis of Extremities. E. D. Telford and H. T. Simmons.—p. 575.
Volvulus of Cecum, Associated with Putrid Puerperal Endometritis and Gangrenous Vulvitis. I. Rose.—p. 577.
*Some Factors Affecting Incidence of Postanesthetic Vomiting. R. M. Davies.—p. 578.

Night Blindness and Mental Disorders.—Wittkower and his collaborators investigated histories of 52 soldiers, from 19 to 50 years of age, complaining of night blindness; 39 were less than 30, 1 was an officer, 8 were noncommissioned officers and 43 were privates. Nine had had night blindness since childhood, 16 for several years, 13 noticed difficulty in seeing for the first time in the blackouts preceding the war and 14 have had difficulty since the war. Forty-two of the men were examined at the eye department of a military hospital. The study of 13 gave negative results, 6 were "one eyed" (2 had had one eye removed earlier in life, and in 4 one eye was defective because of trauma, inflammation or amblyopia, but the good eye of these 6 men presented no cause for the night blindness), 11 had slight errors of refraction with good vision with glasses and fair vision without glasses, 11 had moderately high errors of refraction and 1 had degenerative choroidoretinitis involving the peripheral parts of both fundi. Of 40 men tested, dark adaptation was grossly defective in 4, defective in 11, subnormal in 16, low normal in 8 and high normal in 1. The dark adaptation of 33 younger and more intelligent soldiers chosen at random was grossly defective in 1, defective in 1, subnormal in 8, low normal in 13 and high normal in 10. Psychiatric examination of the 52 soldiers revealed that they were psychologically abnormal, and that the abnormality was far beyond that expected in the average population. Apart from the night blindness, most of them were unfit for military service; 9 patients had minor psychologic disorders that were not sufficient to interfere with an ordinary mode of life, 14 had acute and 13 chronic anxiety states, 8 had conversion hysteria, 4 had depression, 3 had schizoid or overaggressive psychopathic personalities and the disorder of 1 could not be classified.

Incidence of Postanesthetic Vomiting.—Davies believes that postanesthetic vomiting is influenced by the operative procedure, the sex of the patient and the anesthetic. From the records of 1,000 unselected patients who were operated on under various anesthetics it was observed that 2.6 per cent had nausea only, 15.7 per cent vomited once, 20.9 per cent vomited two to five times, 6.5 per cent vomited more than five times within eighteen hours and 0.8 per cent vomited more than five times in more than eighteen hours. Of four groups of 100 patients each (given, respectively, nitrous oxide, oxygen and ether; pentothal sodium, nitrous oxide and oxygen; pentothal sodium, nitrous oxide, oxygen and ether, and pentothal sodium, cyclopropane, nitrous oxide, oxygen and ether) 3 per cent of the first group had nausea only, 17 per cent vomited once, 31 per cent vomited twice, 11 per cent vomited three times and none vomited four times, and 68.6 per cent of the women vomited as against 45.5 per cent of the men. The respective percentages for the second group were 6, 15, 20, 5, 0, 56.5 and 26; for the third group they were 0, 17, 21, 4, 0, 52 and 39.6, and for the fourth group the percentages were 1, 10, 10, 6, 1, 26.5 and 10. A study of nausea and vomiting occurring in patients who had operations on the nose, nasopharynx and mouth does not bear out the remark that "patients are always sick after tonsillectomy." A study of minor gynecologic operations (dilation and curettage) revealed that the anesthetic had little effect on the incidence of vomiting but that dilation raised the incidence. The preoperative therapeutic factors capable of reducing the vomiting are absence of food in the stomach, avoidance of excessive purging, proper premedication combined with a basal hypnotic, substitution of pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) for morphine and adequate doses of atropine and scopolamine to prevent secretion and consequent swallowing of saliva and mucus. Favorable postoperative factors are reception of fluids rectally or even orally, avoidance of anoxemia, engaging in as little movement as possible immediately after the patient's return to bed, sedation with soluble pentobarbital and the right lateral position in bed.

Lancet, London

2:475-506 (Oct. 25) 1941

Plea for Graduation at an Earlier Age. A. S. Paterson.—p. 475.
Traumatic Aneurysm of Posterior Tibial Artery, with Foot Drop. I. Macpherson and H. S. Shucksmith.—p. 476.
*Effect of Calcium in Case of Autohemagglutination. H. J. Parish and R. G. Macfarlane.—p. 477.
*Raynaud's Syndrome with Spontaneous Cold Hemagglutination. T. H. C. Benians and W. R. Feasby.—p. 479.
Glandular Fever with Jaundice: Report of Two Cases. L. Martin. —p. 480.
Tetany Following Prolonged Lactation on Deficient Diet. A. B. Anderson and A. Brown.—p. 482.
Well Leg Traction Apparatus for Reducing Fractured Femoral Neck. E. M. Evans.—p. 483.
Primary Ovarian Pregnancy: Case. J. N. M. Ross and T. N. Gledhill.—p. 484.

Calcium in Autohemagglutination.—Parish and Macfarlane state that autohemagglutination occurred in a healthy man of 27 when his blood was withdrawn into citrate or oxalate at room or colder than room temperature. The reaction was reversible, for the clumps disappeared when the blood was warmed to body temperature and reappeared when cooled. Agglutination did not occur when the patient's serum was mixed with cells which were washed in physiologic solution of sodium chloride, unless the cells were resuspended in citrate or oxalate or a trace of citrated or oxalated plasma was added. Autohemagglutination of this type, the authors warn, may lead to errors in blood grouping unless the cells are washed in saline solution or the tests are carried out at body temperature.

Raynaud's Syndrome with Spontaneous Cold Hemagglutination.—Benians and Feasby report 2 cases of Raynaud's syndrome in which autohemagglutination due to cold, in addition to angiospasm, may have been a causative factor. It is recognized that persons with one form of hypersensitivity often show other forms, and it seems probable to the authors that in their 2 patients hypersensitivity to cold played a part in producing the agglutination and the Raynaud's syndrome; in the latter the arteriolar musculature would be the sensitive tissue.

Tubercle, London

22:207-230 (Sept.) 1941

Bronchial Obstruction in Pulmonary Tuberculosis. H. V. Morlock. —p. 207.
*Study on Effects of War Conditions on Group of Pneumothorax Treated Patients. F. Kellermann.—p. 212.

Effect of War on Pneumothorax Treated Patients.—Kellermann states that war has adversely affected the 33 patients who had pneumothorax refills during the first eighteen months of the war. A comparison of these 33 patients with 25 similar patients who had their refills before the outbreak of hostilities shows no appreciable change in the clinical condition of the 33 patients. The 33 patients lost weight or failed to gain weight. The loss or failure to gain weight was not due to food rationing but to the extrinsic factors of anxiety, excitement resulting from the military situation and loss of sleep owing to the prolonged and intensive aerial activity.

Revista de la Asoc. Méd. Argentina, Buenos Aires

55:671-728 (Sept. 15-30) 1941. **Partial Index**

*Origin of Acute Anterior Poliomyelitis. C. Preioni.—p. 676.

Origin of Acute Anterior Poliomyelitis.—According to Preioni the mode of transmission of the virus of acute anterior poliomyelitis has not been definitely determined. The author observed two atypical and one typical case of the disease in a group of children with no contacts. The children lived on a farm in which, as well as in the large surrounding zone, no cases of the disease have been observed for the last four years. They had not been away from the farm for several months nor had they had visitors. All the animals on the farm and its surroundings were well. However, an epidemic of an infection had occurred one month before in the chickens and turkeys of the farm. The clinical picture of the infection in the birds resembled that of an acute or hyperacute anterior poliomyelitis. The animals exhibited a febrile condition and lay on the ground. Some died within three or four days; in others paralysis of the extremities developed after four or five days of the disease. The legs were more paralyzed than the wings. After about one week the birds began to improve, to eat and to move about. Paralysis regressed more or less slowly up to almost a complete disappearance in the birds with a moderate infection but not in those with an acute infection in which the sequels were permanent. One month after the occurrence of the infection one recovered turkey and one recovered hen were separately put into two different places with a normal turkey and a normal rooster which were brought from farms in which the epidemic did not occur. The newcomers got the infection and died. Two months after the occurrence of the infection two other recovered animals were put separately in contact with normal birds from localities free from the epidemic. Not one of the newcomers contracted the disease. A paralytic but otherwise healthy hen with complete paralysis of the legs was killed two months after the infection. The brain and spinal cord were normal on macroscopic examination. The brain, cerebellum and the pons were also normal in microscopic sections. The lumbar segment of the spinal cord and its corresponding spinal ganglions were the seat of a toxic infection with anatomicopathologic changes resembling those of acute anterior poliomyelitis in children. The author believes that the virus which causes acute anterior poliomyelitis is neurotropic. It is transmitted from chickens to children by the chicken louse (Dismanisium avis) imported to the cities with the eggs and on the feathers of the birds. The increased incidence and virulence of acute anterior poliomyelitis during spring and summer seems to depend on the fact that cold weather diminishes the activity of the chicken louse and the virulence of the virus it carries.

Acta Chirurgica Scandinavica, Stockholm

85:361-454 (Oct. 8) 1941

*Total Extirpation of Patella. S. Friberg.—p. 361.
Fractures of the Crus or Tibia Treated According to Method of Parham: 49 Cases. E. Kjaer.—p. 389.
*Transduodenal Choledocholithotomy. E. Brattström.—p. 414.
Spontaneous Cure of Osteochondritis Dissecans in Knee Joint. G. Wiberg.—p. 421.
*Granular Changes in Leukocytes in Connection with Surgical Operations. K. Boman.—p. 432.
Subungual Neoplasms. S. B. Rasmussen.—p. 441.

Total Extirpation of Patella.—Friberg reviews the literature on complete extirpation of the patella and reports observations on 30 patients, 2 of whom underwent bilateral operation. Patellar chondromalacia was the cause of the operation in the greatest number of cases (23); in the other cases patellar extirpation was performed to repair complications after patellar or femoral fractures. In 26 cases the quadriceps tendon was sutured to the patellar ligament. The time of observation after the operation varied from twelve to sixty months; the average was twenty-one months. In 13 patients (40.6 per cent) the operation resulted in a knee joint that was entirely free from symptoms and which could stand severe strains in work and sports without fatigue; 14 other patients (43.8 per cent) were free from symptoms as far as ordinary exertion was concerned but complained of insufficient strength under greater strain and of want of stability when walking on uneven ground, hitting the foot or stumbling. Nevertheless, the latter patients considered themselves much improved by the operation. Thus the operation resulted in an adequately functioning knee joint in 84 per cent of the cases. Suturing of the quadriceps tendon to the patellar ligament produced a good anterior contour of the knee joint. There was complete extension in all the joints in which the tendon had been sutured and in four of the six without such suture. There were no signs of arthritis deformans, but the elapsed time was too short for final evaluation in this respect. Slight calcified deposits were observed in 26 cases at the site of the patella; in 2 cases they were considerable and gave rise to symptoms. The author recommends complete extirpation in cases of recent splintered fractures and of certain simple fractures of the patella.

Transduodenal Choledocholithotomy.—Brattström reports 8 cases of transduodenal choledocholithotomy in which the operation showed good results on a follow-up. This method gives a better survey and is associated with less risk than the retroduodenal method. The technic is described. In the presence of signs of an ascending infection of the bile passages, of internal biliary fistulas or of insufficiency of Oddi's sphincter, the author recommends gastric resection according to Finsterer-Polya.

Granular Changes in Leukocytes in Surgical Operations.—Boman points out that in healthy persons granules demonstrated by the same method show relatively slight deviations from a certain norm. Hammar in 1912 was able to show by means of vital staining with brilliant cresyl blue that the granules of the neutrophil leukocytes change in number and size during morbid conditions and that they increase in number in infectious diseases. These observations were recently confirmed by Hedenius, who found that the granules increase in exophthalmic goiter and that they decrease in chronic polyarthritis. Hedenius employed the metachromatic dye toluidine blue for staining. Using the staining method of Hedenius, Boman made studies on patients in a surgical department. Investigating granular changes during and after operations, he dissolved solid toluidine blue in a 3.8 per cent citrate solution so as to obtain a 0.02 per cent staining solution. Blood samples were taken in the same way and with the same proportion between blood and staining fluid as for a sedimentation test. The glass tube containing the sample was sealed with a rubber stopper and placed for thirty minutes in a thermostat at 37 C. During this time "storage" took place, so that the granules appeared more and more distinctly. After removal of the tube from the thermostat a smear was made which was ready for microscopic examination as soon as it had dried in the air. The author observed a decrease in the number of granules in the neutrophil leukocytes during operation, after severe trauma and before death.

Ugeskrift for Læger, Copenhagen

103:1273-1300 (Oct. 2) 1941

Determination of Prothrombin, with Description of Procedure Especially Suited for Clinic. H. Larsen and P. Plum.—p. 1273.
Leptospirosis Canicolaris with Serous Meningitis: Two Cases. M. Bjørneboe.—p. 1281.
*Value of Examination of Spinal Fluid in Diagnosis of Intracranial Tumors. Karen Bligaard.—p. 1286.
Treatment of Lipid Nephrosis with Potassium Nitrate. H. Kjaergaard.—p. 1289.

Value of Examination of Spinal Fluid in Diagnosis of Intracranial Tumors.—Bligaard reports that examination of the spinal fluid of 400 patients with verified intracranial tumors showed increased protein content and increased pressure in at least three fourths of the patients, with little or no increase in cells, but says that the examination is of almost no practical value in the diagnosis of intracranial tumors, as the increase in cells and protein is irregular and slight and such values may also appear in other diseases in and outside the central nervous system. Constant, well defined increase in the protein content is seen only in basal meningioma, papilloma in the fourth ventricle and acoustic neurinoma; here, however, the diagnosis is almost always assured by the clinical examination and symptoms of increased cranial pressure, which contraindicates lumbar puncture.

Book Notices

Training and Efficiency. [An Experiment in Physical and Economic Rehabilitation.] By E. Jokl, E. H. Cluver, C. Goedvolk and T. W. de Jongh. Boards. Pp. 188, with 46 illustrations. Johannesburg: South African Institute for Medical Research, 1941.

This is an elaborate report on another series of investigations on health and efficiency of the South African Institute for Medical Research. It gives a statistical statement of the improvement in physical fitness of a group of thirty-two special service recruits between 16 and 31 years of age. They had been unemployed, and their posture, general bearing and nutrition were poor. They were given good living conditions, strict discipline, and three hours of physical training a day. The whole procedure is roughly comparable to our CCC camp activities. The purpose of a six months course of training was physical, economic and social rehabilitation. Physical measurements and tests were taken before and after. They included weight, height, posture, trunk length, biacromial diameter, chest girth and diameter. All are tested by a 100 yard dash and a 3 mile run before and after the period. This is not as strenuous as it might appear to be, for several took twenty-six minutes to cover the distance. Only two made better time than twenty minutes in the first test, but nine did so after training. Physiologic tests were centered on respiration and circulation. Breath holding, a standard test for British civil aviators, of whom sixty-nine seconds is required, improved in the trainees from twenty-nine and thirty-nine one hundredths seconds to sixty-eight and fifty-two one hundredths. The respiratory rate after exercise changed little, but the first exercise decline of vital capacity "strikingly decreased." Pulse rates improved; i. e., they were slower after the period of training, changing from seventy-three and fifteen one hundredths to sixty-three and twenty one hundredths. The reaction rise of pulse rate to a standard exercise diminished to the twelfth week in training, but no improvement resulted afterward. The authors report that blood pressure readings at rest showed "an astounding lack of change during the whole period of training." They did not take blood pressure in both positions, standing and lying, as in our standard (Crampton and Schneider) tests of circulatory efficiency. Nor were exercise tolerance tests emphasized, but much prominence was given to blood pressure response to respiratory efforts. Posture, weight and athletic performance improved. The improvement was greater in all particulars in those who were substandard in the preliminary tests. They are of the opinion that "preparing the soldier so that both his fitness for life and his efficiency for battle are on the highest possible level is the supreme demand of the moment." They state that "the standard of physical fitness of a considerable percentage of men in this country is lamentably low."

This is an unusually elaborate intensive study of the effect of six months' training of thirty-two underprivileged young men. The conclusions given, however, rest on a broader base. The authors Cluver and Jokl refer to their earlier investigation (1940) indicating a similar condition among twenty thousand school children. The authors refer also to Jokl's experiment of one hour of physical training a day given to two thousand five hundred trainees in the industrial training field. There was an improvement in health, discipline and working efficiency. They point to the need of highly competent instructors. On the basis of the results of several investigations they recommend a program of fitness testing and training for all men in the population. The report closes with the following:

> We cannot close our eyes to the fact that an astoundingly large number of individuals will not seek, out of their own initiative, ways and means to develop and educate themselves to the optimum of their potential abilities. For this reason we have come to the conclusion that it is necessary to introduce some system of compulsion under which the state would take charge of young citizens who are, for any reason, unable or unwilling to carry their weight in the economic life of the community.
>
> In suggesting the introduction of compulsion into our democratic society, we feel that we have to anticipate the argument that we are interfering with "individual initiative." We wish to say, however, that our plan to advocate the use of "reasonable compulsion" is the direct result of our observation of individual initiative being lacking in a large number of people. To allow the present state of affairs to continue would mean to invite conditions still more disastrous than those which we are witnessing at present.
>
> Who possesses initiative? Only a small percentage of the people; just enough, we hope, to elaborate, organize and control schemes of the type we have in mind. On the other hand, we are convinced that our scheme will introduce into society a new element of vigor and action.

Resuscitation Equipment, Organization, Training and Procedures. By Command of the Army Council. Great Britain War Office Publications No. 5120. Paper. Price, 25 cents; 9d. Pp. 56, with 17 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1941.

The American reader who has become accustomed to regard resuscitation as synonymous with artificial respiration will be surprised to find that this pamphlet deals almost exclusively with transfusion. Of the fifty-two pages devoted to the text, three pages refer to oxygen therapy merely as a complementary measure. The purpose of this pamphlet, as stated, is to present recommendations for the training of a special officer at each military hospital, general hospital and casualty clearing station as well as field ambulances in the etiology, pathology and treatment of secondary (synonyms traumatic, hemorrhagic, wound) shock. Since Webster's Dictionary refers to resuscitation as . . . "to revive, revivify or as to resuscitate from drowning," it would appear that the British use of the word is entirely correct and for that matter so is ours. The broader English use of this terminology may, however, serve as a useful integrator of present closely related but dissociated activities. The pamphlet has a strong appeal for the American physician because of the fact that it has been prepared from "experience gained at Dunkirk and from air raids in 1940." It immediately creates the impression of a reality which we may ourselves soon face. The text is concise, clear and enriched with all necessary detail. The matter is divided into two sections: 1. General principles, including advantages of a resuscitation ward, training of nurses and orderlies, duties of the resuscitation officer, equipment, supplies and communications. 2. Notes concerning procedures, equipment and materials used in resuscitative work. This section includes the taking of blood, transfusion reactions and care of equipment. Practical suggestions are given relating to hemostasis, splints, the administration of oxygen, morphine, chemotherapy and refrigeration. The text is illustrated with numerous halftones and helpful drawings. The practical value of this carefully prepared pamphlet to the American physician at this moment of emergency can scarely be overestimated. It deserves careful study and close imitation because of the simplicity of its approach. It serves as a substantial foundation on which resuscitation, as we are accustomed to think of the term, may subsequently be added.

Tratamento da lepra à luz de novas idéias. Por el Dr. J. M. Gomes, assistente-clinico do Instituto de Higiene, Universidade de São Paulo. Paper. Pp. 189, with illustrations. São Paulo: Emprêsa Gráfica da "Revista dos Tribunais," 1941.

In this volume the author describes a new specific for the treatment of leprosy. This time it is the vitamins, particularly vitamin A in the form of "Alfon." In the light of the recent discoveries on the mode of action of the vitamins, the author points out their benevolent possibilities in the treatment of a chronic infectious disease such as leprosy. It is stressed that the Hansen bacillus is not the only cause of this disease but that there is a predisposing factor in the form of a dietary deficiency.

The author has studied the morphology of Mycobacterium leprae in its human parasitism. He claims to have discovered that there are evolutionary and involutionary phases in its life cycle. The evolutionary phase is virus, homogenous acid-fast bacillus, granular acid-fast bacillus, acid-fast granulation and virus. The involutionary phase comprises virus, homogenous acid-fast bacillus, fragmentary acid-fast bacillus, acid-sensitive bacillus, acid-sensitive granulation and destruction.

"Alfon," the new specific, is the trade name of a product manufactured by the "Laboratorios Farmaceuticos Reunidos" of São Paulo, Brazil. It is stated to be a 2 per cent colloidal suspension of carotenoids in physiologic solution. A carotenoid is a previtamin A obtained from plant life. After injection, carotenoids are said to be transformed into vitamin A through fermentation, which takes place in the liver.

As a foundation for this new form of therapy the author discusses in detail the similarity between the early manifestations of leprosy and those of avitaminosis A. Vitamin A is spoken of as the great anti-infection vitamin, the stimulator of phagocytosis and the protector of epithelium. It is considered the essential vitamin for the preservation and proper functioning of the ocular apparatus. By animal experimentations it is said that it has been shown that a lack of this vitamin leads to a demyelination of the peripheral nerves. Leprosy, the author states, is most prevalent in localities where the native food is poor in vitamin A. The potentiality for good of vitamin A in leprosy is pointed out in that it is the epithelium, the peripheral nerves and the ocular tissues which are most vulnerable in this disease.

"Alfon" is claimed to have two modes of action in leprosy. The one, a biotrophic action on the germs, is a specific action, whereby the evolution of M. leprae is hastened through its various phases to its final degeneration stage and disappearance from the lesion. The other, a nonspecific action, is a stimulation of the body tissues' defensive mechanism against infections in general.

The final chapter of the book deals with case reports. Of 400 cases treated with Alfon, only 238 are reviewed because of adverse circumstances in the others. The period of observation is eight to nine months, which is short for such a chronic disease. The data presented are not convincing as to the permanence of the improvements claimed to have occurred. There have been some adverse reports in the medical literature on the use of Alfon in leprosy. The most objectionable feature of this product has been the manner in which it has been extensively advertised in the public press of Brazil as a true specific. At the National Leprosarium, Carville, La., no favorable results were noted in 10 cases of leprosy after ten months of treatment. The best that can be said for vitamin therapy in general is that it is still in its experimental stage.

Leaders of Medicine: Biographical Sketches of Outstanding American and European Physicians. By Solomon R. Kagan, M.D. Cloth. Price, $3. Pp. 176, with 4 portraits. Boston: Medico-Historical Press, 1941.

This small book comprises fairly extensive notes on the careers of twelve leaders of medicine: Jacob Henle, Rudolf Virchow, Silas Weir Mitchell, Abraham Jacobi, Sir Thomas Clifford Allbutt, Jacob Da Silva Solis-Cohen, John Shaw Billings, Julius Cohnheim, Carl Weigert, Sir William Osler, William Henry Welch and Paul Ehrlich. These reviews are interesting, instructive and well written, showing perhaps the influence of the late Fielding H. Garrison, under whose inspiration the volume was written. The timeliness of certain portions of the book is apparent in a quotation from a letter of William Osler written in Berlin in 1884, who said "Should another Moses arise and preach a Semitic exodus from Germany, and should he prevail, they would leave the land impoverished far more than was ancient Egypt by the loss of the 'jewels of gold and jewels of silver' of which the people were 'spoiled.' To say nothing of the material wealth, enough to buy Palestine over and over again, there is not a profession which would not suffer the serious loss of many of its most brilliant ornaments, and in none more so than our own." A few of the more important historical statements in this book have been condensed and used in the Student Section of THE JOURNAL in the column "Do You Know What Physician—" Perhaps the success of this venture will encourage the author to go further into the field of medical history.

The Early Treatment of War Wounds. By William Anderson, O.B.E., M.B., Ch.B., Surgeon and Lecturer in Surgery, Aberdeen Royal Infirmary, Aberdeen. Oxford War Manuals, General Editor: The Rt. Hon. Lord Horder, G.C.V.O. Cloth. Price, $1.50. Pp. 96, with 12 illustrations. New York & London: Oxford University Press, 1941.

This small "Oxford War Manual" is in reality a summary of the experiences of the author in World War I; as stated in the preface, he hopes that a record of the failures and successes in the treatment of the wounded will act as a starting point for the great advances which he is confident will be achieved during the present struggle. The first part of the first chapter is a masterful statement of the general principles for the care of the war wounded and should be read by every medical officer. The paragraphs on splinting in fractures are likewise excellent. Over half the manual, however, does not deal, as indicated in the title, with the early treatment of war wounds but with the later operative procedures. The "present struggle" has already gone two years, which to the reviewer seems long enough to include in a manual of this kind some of the "great advances" which have already been achieved. For example, a sufficient experience has accumulated, certainly as judged by the many English reports, establishing the value of the sulfonamide drugs both in the prevention and in the treatment of war wound infections. The use of tetanus toxoid has also been extensive enough to commend it in the prophylaxis of lockjaw. The treatment of compound fractures has been so improved during recent years as to warrant inclusion in a current war manual. Plasma, liquid and dry, also deserves wide consideration on the basis of contemporary experiences. These and other topics, barely mentioned in the present work, could with profit be added to or incorporated with the experiences of twenty-five years ago. These experiences, while basic and valuable, seem in certain cases at least as outmoded as a model T Ford.

Effective Living. By C. E. Turner, A.M., Sc.D., Dr.P.H., Professor of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, and Elizabeth McHose, B.S., M.A., Director of Physical Education for Girls, Senior High School, Reading, Pennsylvania. Cloth. Price, $1.90. Pp. 432, with 164 illustrations. St. Louis: C. V. Mosby Company, 1941.

This is an excellent volume dealing with the problem of healthful living and how it may be attained. Part I deals with the individual's mode and manner of living. It discusses exercise, the mechanical use of the body, care of the skin, mental hygiene and food and gives adequate information on the vital organs. It does not go into minute detail in describing the respiratory system, the circulatory system and the excretory system but presents in an interesting way sufficient information on anatomy and physiology for most lay readers. In part II the authors discuss effective living in the family. Here healthful living conditions in the home are discussed, as well as the health of the family group. The chapter on becoming good ancestors will be particularly useful to the reader. Part III deals with effective living in the community. This part discusses sanitation, the various health agencies and their programs, as well as information on the prevention of communicable disease and the lowering of the death rate. Of particular value is the self-checking chart at the end of each subject and also the lists of problems and activities.

Las funciones digestivas en el organismo tuberculoso (estudio clinico y coprológico). Tesis de doctorado presentada por Juan Antonio Tabanera. Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Acta No. 5346. Paper. Pp. 153, with 15 illustrations. Buenos Aires, 1940.

The author selected the subject of functions of digestion in tuberculous persons for his doctoral thesis. The clinical and coprologic study is based on observations of patients of his personal clientele. The chapters of the book cover the following topics: 1. Physiology of digestive tract from mouth to rectum. 2. Constituents of food and chemical transformation of food and alimentary bolus during digestion. 3, 4 and 5. Macroscopic and microscopic aspects, chemical constituents, chemical reactions and bacteriology of normal feces and of feces of patients with pulmonary tuberculosis, alone or complicated by intestinal tuberculosis. 6. Coprology in diagnosis of intestinal tuberculosis. 7. Clinical aspects and course of nontuberculous intestinal inflammation, colitis, intestinal ulceration and intestinal tuberculosis; tests for differential diagnosis, especially the catalase test. 8. Diet in intestinal tuberculosis, in accordance to location of tuberculous lesions in a given intestinal segment; also importance of vitamins in diet and in therapy of intestinal tuberculosis. The book ends with three pages of bibliography.

Medico-Legal Law Brief in Relation to Malpractice Suits with Citations. By John Ralph Ballinger, B.S., M.D., Chairman of the Medico-Legal Committee of the Illinois State Medical Society and of the Chicago Medical Society. Paper. No pagination. Chicago: The Author, 1941.

The author of this small brochure has been chairman of the Medico-Legal Committee of the Illinois State Medical Society and of the Chicago Medical Society for twenty-eight years and here presents, in brief form, comments on the nature of the complaints that have been filed by patients against members of the medical profession in Illinois, with citations to court decisions in point.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VITAMINS AND RHEUMATOID ARTHRITIS

To the Editor:—**What is the present status of vitamin B therapy in arthritis and allied conditions?** **Edward Suckle, M.D., Coatesville, Pa.**

To the Editor:—**Recently the treatment of chronic arthritis with high doses of vitamin D has been advocated. European publications state that the administration of high doses of vitamin D over a prolonged period is liable to produce irreversible arteriosclerotic changes. What is known on this subject?** **Lothar Luft, M.D., New York.**

ANSWER.—A deficiency of almost every one of the vitamins has been regarded as the cause of rheumatoid arthritis. A deficiency of vitamin B was first blamed by Fletcher in 1922, then of vitamin D by Dreyer and Reed in 1935 and a little later of vitamin C by Rinehart in 1935. More recently deficiencies of vitamins A and E in rheumatic patients have been studied. Such is the current frenzy of the layman for vitamins that rheumatic patients are pestering their physicians for the "antirheumatism vitamin" and they feel badly neglected unless some vitamin is prescribed.

VITAMIN A

Deficiencies of vitamin A in the plasma were noted by Race in 1937 among patients who had rheumatoid arthritis. This observation was confirmed by Hall, Bayles and Soutter in 1940, who suggested that these deficiencies might be responsible for the supposed susceptibility of rheumatic patients to infections of the upper part of the respiratory tract. The administration of vitamin A concentrates readily corrects the plasma deficiencies but does not improve the condition of the joints in rheumatoid arthritis (Monroe; Hall, Bayles and Soutter).

VITAMIN B COMPLEX

In 1922 and later years Fletcher suggested that certain features of rheumatoid arthritis might be related to a deficiency of vitamin B. In rheumatoid arthritis certain of the symptoms of thiamine hydrochloride (vitamin B_1) deficiency are sometimes present (weakness, anorexia, muscular atrophy, reduced dextrose tolerance, abnormalities of size and position of colon) but others are absent (polyneuritis, lymphopenia, excess lactic acid). Fletcher and others were able to produce atonic bowels in rats given diets deficient in vitamin B but no definite arthritis resulted. The diets of the patients of Sherwood and Thomson suffering from rheumatoid arthritis were rarely deficient in vitamin B, and neuritis was extremely rare. The administration of vitamins B_1 and B_2 has not produced any notable effect on arthritic patients. For these reasons most workers do not regard rheumatoid arthritis as a B avitaminosis (Race; Steinberg, 1936).

Sherwood and Thomson in 1939 noted that the home diets of their patients who had rheumatoid arthritis were commonly deficient in riboflavin (vitamin G), but no other clinical or therapeutic studies have been made.

Disappointed in their search for germs as the cause of rheumatoid arthritis and in the results of removal of foci of infection and administration of vaccines, physicians now are following the trend of the times and seeking evidence for an antirheumatic vitamin. Such a vitamin has not been discovered so far. Patients who have rheumatoid arthritis, like those who have many other diseases, often present subnormal amounts of various vitamins in their plasma, but these deficiencies are not specific for rheumatoid arthritis nor are they of proved etiologic significance. Like normal persons, arthritic patients should insure for themselves an adequate daily quota of vitamins but, as some one has said aptly, these should be bought at the grocery store, not at the drug store.

ASCORBIC ACID (VITAMIN C)

In 1935 Rinehart reported that subacute or chronic vitamin C deficiency produced in guinea pigs an arthropathy which he believed was somewhat similar to rheumatoid arthritis. Some of his patients suffering from rheumatoid arthritis presented evidence of vitamin C deficiency. Therefore Rinehart suggested that vitamin C deficiency might be an etiologic factor in rheumatoid arthritis. He and others (Rinehart, Greenberg and Baker) later reported low concentrations of ascorbic acid in the plasma in rheumatoid arthritis. That such a deficiency exists has been noted since by others also, and this deficiency of vitamin C in the plasma may exist whether the patient's diet is or is not deficient in the vitamin. However, scurvy is not present. To Rinehart and his colleagues in 1938 the results in some cases of rheumatoid arthritis in which ascorbic acid was given were "distinctly encouraging," but others who have administered vitamin C in large amounts parenterally and orally have not observed any notable effects on the joints, although the vitamin deficiencies in the plasma were corrected readily (Holbrook and Hill; Race; Jacques).

VITAMIN D

Two arthritic patients to whom Dreyer and Reed in 1935 gave massive doses of vitamin D for their hay fever noted improvement in their joints. Therefore Dreyer and Reed gave similar large doses to other arthritic patients with reported improvement. Diminution of pain and an improved sense of well-being presumably were noted. But toxic symptoms (nausea, polyuria, polydipsia, vomiting) fairly frequently appeared. Later Reed adopted a working hypothesis that in "arthritis" there may be an obscure disturbance of calcium metabolism which vitamin D somehow "stabilizes." But many workers have failed to demonstrate any abnormality of the metabolism of calcium in rheumatoid arthritis, and Reed admitted that patients receiving massive doses of vitamin D did not exhibit any consistent changes in the concentration of calcium or phosphorus in the blood and urine. The most voluble proponent of vitamin D therapy has been Farley, who repeatedly has reported "remarkable results" in almost every case of "arthritis" so treated. Farley has insisted that vitamin D as prepared by the Whittier process (citron) is more effective and less toxic than vitamin D preparations prepared otherwise. Snyder and Squires in their paper of 1940 appeared to share this view, but this contention remains unproved and the further report of Farley in 1941 continued to exhibit intemperate enthusiasm and a lack of critical judgment.

Other preparations of vitamin D have been given to arthritic patients by several workers (Cohen; Abrams and Bauer; Steinberg, 1938; Muether), who have not noted any striking results; there has been occasional subjective improvement but little or no objective improvement and no significant reduction in sedimentation rates. The use of massive doses of vitamin D in treatment of patients suffering from chronic arthritis therefore has been called "irrational" (Ishmael and McBride) or even "dangerous" (Cohen). The Council on Pharmacy and Chemistry of the American Medical Association in 1937 did not accept vitamin D as an approved remedy for any form of arthritis, contending that there is no evidence that the doses used have been nontoxic or effective. The Council did not find any scientific evidence to support the claims made and deprecated the unwarranted exploitation of these products by certain manufacturers. Despite the Council's report, certain preparations of vitamin D, notably ertron, continue to be advertised vigorously, one might say offensively in view of the glowing terms applied to them. These preparations are rather expensive when their use is long continued, and they do not seem to be worth the money even though their long continued use is probably not as dangerous as some writers have suggested.

VITAMIN E

To date vitamin E has not been linked with rheumatoid arthritis, but Steinberg suggested in 1941 that primary fibrositis may represent not an infectious process but a metabolic disturbance, perhaps a deficiency of vitamin E. However, confirmatory evidence is obviously indicated before the therapeutic possibility of vitamin E in this field can be evaluated.

References:

Abrams, N. R., and Bauer, Walter: The Treatment of Rheumatoid Arthritis with Large Doses of Vitamin D, THE JOURNAL, Oct. 29, 1938, p. 1632.
Cohen, Abraham: *Internat. Clin.* **3:** 287 (Sept.) 1937.
Council on Pharmacy and Chemistry, Condol and Ertron Not Acceptable for N. N. R., THE JOURNAL, July 10, 1937, p. 132.
Dreyer, Irving, and Reed, C. I.: *Arch. Phys. Therapy* **16:** 537 (Sept.) 1935.
Farley, R. T.: *Illinois M. J.* **71:** 74 (Jan.) 1937; *J. Am. Inst. Homeop.* **31:** 405 (July) 1938; *Journal-Lancet* **59:** 401 (Sept.) 1939. Farley, R. T.; Spierling, H. F., and Kraines, S. H.: *Indust. Med.* **10:** 341 (Aug.) 1941.
Fletcher, A. A.: *Canad. M. A. J.* **12:** 633 (Sept.) 1922. Fletcher, A. A., and Graham, Duncan: *Am. J. M. Sc.* **179:** 91 (Jan.) 1930; *J. Lab. & Clin. Med.* **15:** 1140 (Aug.) 1930; *M. J. & Rec.* **138:** 363 (Nov. 15) 1933.
Hall, M. G.; Bayles, T. B., and Soutter, Phillis: *New England J. Med.* **223:** 92 (July 18) 1940.
Holbrook, W. P., and Hill, D. F.: Treatment of Atrophic Arthritis, THE JOURNAL, July 4, 1936, p. 34.
Ishmael, W. K., and McBride, E. D.: *J. Oklahoma M. A.* **30:** 351 (Oct.) 1937.
Jacques, R. H.: *J. Bone & Joint Surg.* **22:** 324 (April) 1940.
Monroe, R. T.: The Oxford Medicine, New York, Oxford University Press, 1940, vol. 4, p. 367.
Muether, R. O.: *J. Missouri M. A.* **37:** 111 (March) 1940.

Race, Joseph: *J. State Med.* **45:** 258 (May) 1937.
Reed, C. I.: *Peoria M. News* **8:** 8, 1937.
Rinehart, J. F.: *Ann. Int. Med.* **9:** 671 (Nov.) 1935.
Rinehart, J. F.; Greenberg, L. D., and Baker, Frances: *Exper. Biol. & Med.* **35:** 347 (Nov.) 1936.
Rinehart, J. F.; Greenberg, L. D.; Baker, Frances; Mettier, S. R.; Bruckman, F. S., and Choy, Frank: Metabolism of Vitamin C in Rheumatoid Arthritis, Arch. Int. Med. **61:** 537 (April) 1938.
Sherwood, K. K., and Thomson, M. E.: *J. Am. Dietet. A.* **15:** 20 (Jan.) 1939.
Snyder, R. G., and Squires, W. H.: *New York State J. Med.* **40:** 708 (May) 1940.
Steinberg, C. L.: *Am. J. Digest. Dis. & Nutrition* **3:** 765 (Dec.) 1936; *J. Lab. & Clin. Med.* **24:** 17 (Oct.) 1938; *Am. J. M. Sc.* **201:** 347 (March) 1941.

TREATMENT OF LATE SYPHILIS IN PATIENT WITH POOR VEINS

To the Editor:—**A woman aged 50, weighing 250 pounds (113 Kg.), has late syphilis. It has been about twenty-five years since the initial lesion. The diagnosis is syphilitic aortitis. The patient's veins cannot be isolated for intravenous medication. 1. What is the value of sulfarsphenamine? 2. What is the relative value of sulfarsphenamine as compared with neoarsphenamine? 3. What are the dosage and frequency of administration? Is it painful? 4. What is the usefulness of iodides, mercury and bismuth compounds in such a case? 5. What course of treatment would you recommend?**

Maxwell Herschleder, M.D., Gary, Ind.

ANSWER.—1. Sulfarsphenamine should not be used for adults because of the risk of serious reactions, particularly postarsenical dermatitis, blood dyscrasias and encephalitis. Bismarsen is a much safer arsenical drug for use in these circumstances.

2. With adequate dosage and spacing of dosage, bismarsen may be considered under the circumstances to be the equivalent of neoarsphenamine.

3. The usual dose is 0.2 Gm. given twice weekly. There is often mild to moderate pain after the intramuscular injection of bismarsen, which may be minimized by proper technic.

4. Either or both heavy metals and potassium iodide may be used in a case such as that described.

5. Treatment may begin with twelve weekly intramuscular injections of bismuth subsalicylate in oil, each 0.2 Gm., combined with the simultaneous administration of potassium iodide by mouth in a dose of 1 to 2 Gm. three times daily. This may be followed by a course of twenty intramuscular injections of bismarsen, the first dose of which should not exceed 0.05 Gm. and subsequent doses of 0.1 to 0.2 Gm., depending on the type and extent of aortic involvement. If the patient has uncomplicated syphilitic aortitis without evidence of cardiac embarrassment or congestive heart failure, the average dose of 0.2 Gm. twice weekly may be used. If, on the other hand, either saccular aneurysm or aortic regurgitation is present or if the patient has beginning signs of myocardial failure, the dose should not exceed 0.1 Gm. Thereafter treatment should be kept up for a minimum period of two years with courses of bismuth subsalicylate alternating with courses of bismarsen. If it is desired to substitute mercury for bismuth subsalicylate, intramuscular injections of any mercurial product should not be used, but instead the drug should be given by inunction.

It goes without saying that this antisyphilitic treatment should be accompanied by appropriate general medical care, including weight reduction.

Further details as to the treatment of cardiovascular syphilis may be found in chapter 20 of Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1934, or in chapter 18 of Moore, J. E.: Modern Treatment of Syphilis, Springfield, Ill., C. C. Thomas, 1941.

VACCINES FOR CHRONIC SINUSITIS

To the Editor:—**What is the consensus among otolaryngologists as to the efficacy of vaccines in the clearing of chronic sphenoethmoiditis? Which is preferred, stock or autogenous? What is the usual method of employment of the vaccine?**

M.D., Pennsylvania.

ANSWER.—It is impossible to answer categorically as to the efficacy of vaccines in chronic sinusitis. In general it may be fairly said that many or most rhinologists are dubious about their value in these conditions. There is, however, considerable evidence on the other side which must be accepted with respect until the question is more positively settled.

For instance, Walsh in experimental animals instilled bacterial antigen intranasally and found a "mobilization of leukocytes and macrophages in the subepithelial areas, conditions which elsewhere in the body have been shown to be associated with increased resistance to infection." Furthermore, there was produced by this instillation specific agglutinins in the nasal mucosa, the blood serum and various organs of the body. Walsh worked with Salmonella paratyphi B and Eberthella typhosa. Others, notably Linton, obtained experimentally similar results using virulent strains of streptococci. Walsh made a vaccine composed of various strains of bacteria obtained from the nasal passages of patients, which was to be instilled in the noses of patients desiring relief from colds and the like.

Similar results have been obtained in patients by use of a vaccine composed of numerous strains of organisms recovered from the nasal passages of persons suffering from infections. Gundrum treated 500 patients suffering from chronic sinusitis. He used stock bacterial antigens made after Besredka's method and instilled it after the displacement method of Proetz. A large number of patients reported permanent improvement.

Putting aside the various claims for and against the use of vaccines, it may be agreed that results must depend in large degree on the amount of mucous membrane and even bone damage present in each individual case.

If an autogenous vaccine is used it must be reasonably certain that the offending organisms will appear in the culture and vaccine and not be overshadowed or overgrown by others with no etiologic significance. In this respect stock vaccines may be superior because they contain numerous strains of possible offenders.

Vaccines may be employed by injection or instilled in the nose with a dropper or used after the displacement method of Proetz. Information available to date is too indefinite to permit of positive recommendations.

References:

Womack, D. R.: *Laryngoscope* **45:** 554 (July) 1935.
Gundrum, L. K., *ibid.* **50:** 989 (Oct.) 1940.
Linton, C. S.: Resistance of the Upper Respiratory Mucosa to Infection, *Ann. Otol., Rhin. & Laryng.* **42:** 64 (March) 1933.
Walsh, T. E.: Intranasal Vaccine Spray—Its Use in Prophylaxis Against Common Cold, *ibid.* **49:** 875 (Dec.) 1940.
Walsh, T. E.: Prophylaxis of the Common Cold, *Arch. Otolaryng.* **34:** 1093 (Dec.) 1941.

MANAGEMENT OF FRACTURED TEETH AND ALVEOLAR PROCESS

To the Editor:—**A patient aged 60 had a simple fracture of the upper alveolar process of the upper jaw with a fracture of the roots of two incisors. The fracture was reduced within five minutes. The teeth were not extracted. They were replaced as near as possible to their normal position. Some of four upper incisors were pulled downward but were replaced in as nearly normal a position as possible. The teeth act as a splint. Should the fractured teeth be extracted? If so, how soon if no complications develop? If one of the teeth was filled years ago and the filling did not reach the bottom of the cavity, should it be extracted? It is taken for granted that the nerve of the tooth was killed. When the root of a tooth is fractured should it be extracted? I am referring only to the teeth mentioned. The patient has chronic arthritis.**

M.D., New Mexico.

ANSWER.—As a general rule, the preferable treatment of a patient such as that described is conservative, rather than immediate extraction of such fractured teeth, especially if the teeth can be utilized in the stabilization of the fractured bones. If complications arise, then the fractured teeth can be extracted as indicated. If the teeth can be utilized in immobilizing the fracture until it has healed there is less danger of loss of bone through infection and sequestration. It is important to conserve the bone and wait until such time as the problem resolves itself into a dental one. However, the clinical aspect of the patient should govern the treatment.

RELEASE OF TOURNIQUET

To the Editor:—**Concerning the frequency of temporary release of a tourniquet applied for arterial hemorrhage, a lecturer to industrial classes in first aid tells me that the men like definite time, not a variable of from ten to twenty minutes as stated in various manuals. What would be the best definite time to give these men for such frequency?**

Harold B. Osborn, M.D., Fillmore, Calif.

ANSWER.—In case a tourniquet is applied for the control of arterial hemorrhage, it is wise to release the tourniquet for a few minutes at thirty minute intervals. If the extremity is packed in ice, this time interval can be safely extended to one hour.

MULTIPLE LIPOMAS

To the Editor:—**A man aged 26 has had numerous subcutaneous lipomas involving the limbs and the trunk for the last six years. These vary in size, number at least a hundred and are painless except when they are irritated at friction points. The general health is good, and there are no other abnormalities. Biopsy done under local anesthesia revealed these tumors to be lobulated and encapsulated and to consist entirely of fat cells and connective tissue. The patient states that the tumors are increasing in number with time and in size as he gains weight. Is there any therapy besides excision that will help him?**

Anthony E. Sukis, M.D., Chicago.

ANSWER.—There is no effective therapy other than excision for such lesions.